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**Implementing a Database to
Intervene in and Reduce Gun Violence
in Rochester, NY**

by

Audrey DiPoala

A Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Science in Criminal Justice

Department of Criminal Justice
College of Liberal Arts

Rochester Institute of Technology
Rochester, NY
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ABSTRACT

The purpose of this thesis was to examine the issue of gun violence, specifically urban gun violence in the city of Rochester, New York. The goal was to gain an understanding of the circumstances surrounding these shootings and to learn how to potentially reduce these types of incidents. In order to do this, we created a database containing over 200 different variables covering incident information, victim/suspect information, weapons information, circumstances, and outcome of the investigation. All fatal and non-fatal shootings in the City of Rochester between years 2010 and 2012 were entered into this database. These three years' worth of data were then analyzed. One of the most notable findings included the large proportion of shootings that were identified as being the result of some type of dispute. It was also found that over half of the shootings had some degree of gang involvement, and the overwhelming majority of all shootings in the study were carried out by handguns. Additionally, less than half of the victims claimed to not know their attacker. Based on this information, it is safe to say that most shootings in Rochester are not random; there is likely a precursor or series of events leading up to the shooting. This tells us that intervention is possible if we identify ongoing disputes that are escalating in violence. Once we identify the violent disputes, we can focus police, social, and political resources in those acute areas and groups. This project helped to secure funding for these exact types of programs through the New York State Gun Involved Violence Elimination (GIVE) initiative, as well as the Smart Policing Initiative (SPI) Violent Retaliatory Dispute Project.

Chapter 1

Background on Gun Violence

Gun Violence in General

The history of firearm violence in America is complex. One factor alone is not enough to draw a conclusion about early America's gun culture, but historical accounts point towards the impression that guns have been a part of American life since before the 1700's (Lindgren, 2002). Guns in colonial America are found to have been fairly available and affordable, yet slightly less accurate and effective than most firearms today. Homicide trends are also found by historians to have been similar, if not higher, in colonial times than they are today. Though there is evidence to support the notion that guns in America have shifted from "simpler guns manufactured one at a time to more sophisticated mass-produced guns" (Lindgren, 2002, p. 4), there is still controversy over whether more guns do in fact result in more homicide.

Recent interest in firearm possession and violence sparks controversy over the Second Amendment to the U.S. Constitution: "A well-regulated Militia, being necessary to the security of a free State, the right of the people to keep and bear Arms, shall not be infringed" (U.S. Const. amend. II). This controversy of the people's right to bear arms remains at large across the nation. An example of concern fueling the debate on gun law is expressed by the New Yorkers Against Gun Violence (NYAGV). The group suggests that the solution to gun-related violence is providing stricter gun laws, claiming that weak laws and lax enforcement have allowed guns to get into the 'wrong hands.' The NYAGV goes on to present that "Americans are murdered with guns at the rate of 32 people a day- [who are] gone because of guns in the wrong hands.... And if

guns are in the wrong hands, the gun violence will continue” (<http://nyagv.org>, The gun violence problem, 2012).

Although there is the argument that strict regulation may help reduce the number of deaths and injuries relating to firearms, it is important to understand the full scope of the issue. Before reaching a conclusion of how best to solve the problem, it is necessary to discern the actual “alarming regularity” of these incidents and identify the so-called “wrong hands.” With a solid foundation, it is then possible to examine the circumstances pertaining to violence involving gun use. Using the collective findings to form a more thorough understanding of these crimes provides the ability to identify the source of the problem, and to develop an informed solution.

Statistics on Firearm Violence

Data Collection Methods

The data gathered for this analysis of gun-related violent crime include both fatal and nonfatal events. Fatal shooting incidents include the crimes of murder and manslaughter, with homicide a direct result of the shooting. Nonfatal incidents account for an assault in which the injury is caused by the discharge of a firearm (Federal Bureau of Investigation). Data on fatal incidents for this study are collected from the Uniform Crime Reports (UCR) published by the FBI and the Department of Health and Human Services (HHS). Information on nonfatal incidents are retrieved primarily from the National Crime Victimization Survey (NCVS) by the U.S. Department of Justice’s Bureau of Justice Statistics, as well as the Department of Health and Human Services. These data refer only to incidents of interpersonal violence; suicide and self-injury are not included in these reports. Each record accounts for individual victims, regardless of the number involved in a single incident.

In recognizing that the UCR and NCVS are both nationally applied reports, data from these sources may not always prove to be consistent. The UCR contains only crimes reported to law enforcement agencies, which are then reported to the FBI by the agencies themselves. To ensure credibility, the process requires proper documentation and reliable reporting by each agency. In order to account for events not known and reported to the police, the NCVS includes self-reported incidents of victimization. The concern of credibility of these data rests on the reliability of victim testimony. While the UCR and NCVS are both crime and law enforcement-based, it will also be necessary to refer to the Centers for Disease Control and Prevention (CDC) of the Department of Health and Human Services, which tracks injuries and deaths through hospital and medical records.

In New York State, firearm crime statistics are reported in the *Crime, Arrest, and Firearm Activity Report*. This source, prepared monthly by the Division of Criminal Justice Services (DCJS), reports annual and monthly violent and property index crime incidents for 17 participating counties outside of New York City (DCJS, 2010).

National Statistics

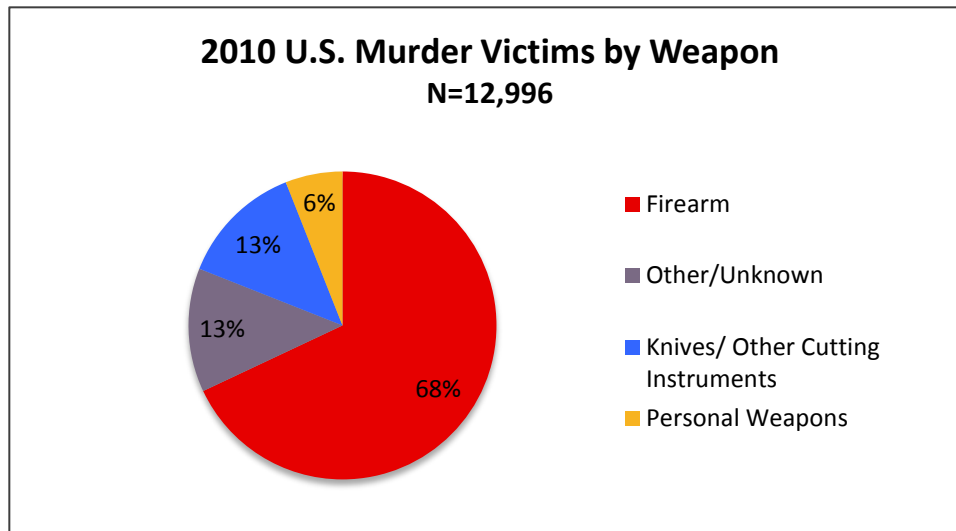


Figure 1: U.S. homicide victims broken down by weapon used. Data from FBI's Uniform Crime Report, 2010.

When discussing firearm violence, incidence of homicide is important to consider. According to the FBI Uniform Crime Reports, firearms generally account for just under 70% of all homicides. In 2010, shown in Figure 1, firearms accounted for about 68% of homicides within that year. The second largest category of weapons used was knives and other cutting instruments at 13%. Personal weapons such as hands, fists, and teeth made up the smallest percentage of weapons involved in homicides.

In 2010, there were 14,748 homicides (murder and non-negligent manslaughter) in the United States, which equates to a national homicide rate of 4.8 per 100,000 (FBI Uniform Crime Reports, 2012). From 2000-2007 the number of homicides nationally remained steady at around 16,500 per year, but from 2008-2010 (the most recent year these data are available), the rates have steadily declined, decreasing from a rate of 5.7 per 100,000 to 4.8 per 100,000 (FBI Uniform Crime Reports, 2012). While current trends are on a decline, homicide remains a national problem.

Examining national statistics, the trend of fatal victimizations involving firearms follows a slight downward slope in recent years, as shown in Figure 2. However, the pattern of nonfatal injuries involving firearms appears to be increasing over time.

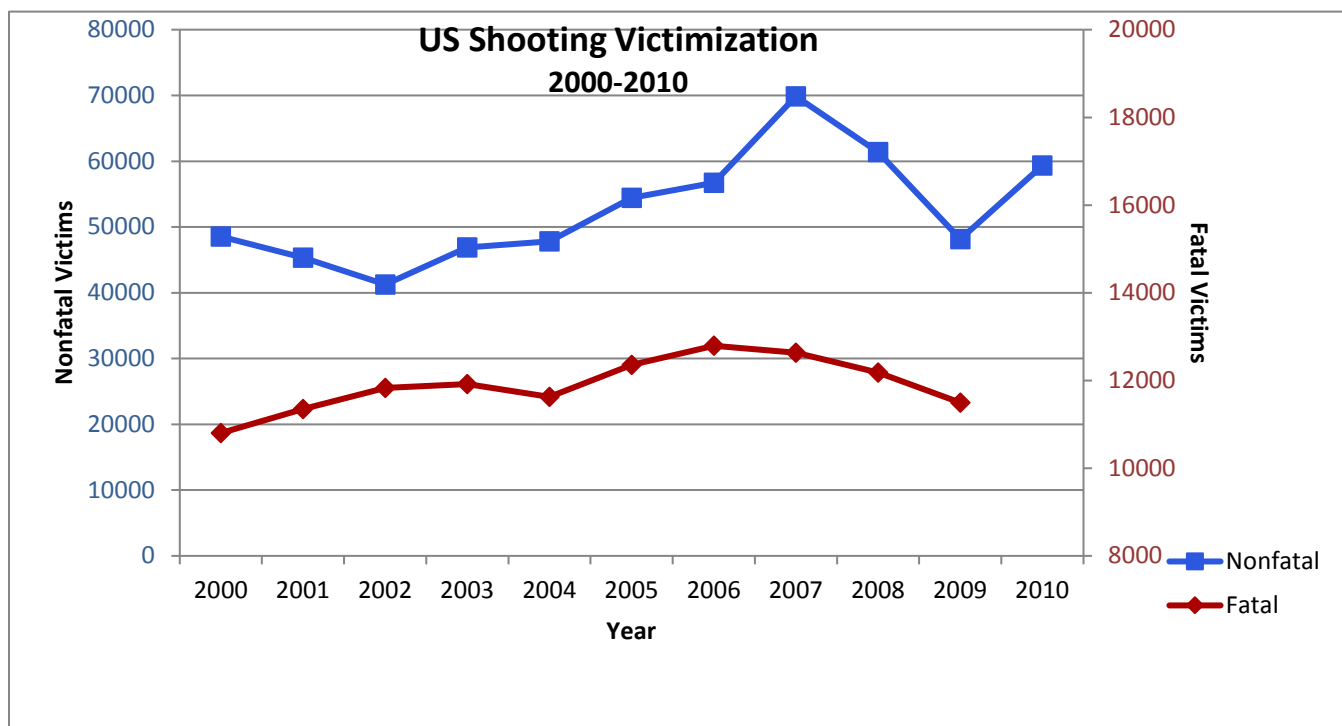


Figure 2: Comparison of fatal vs. nonfatal shooting victims from 2000-2010. Data from the Department of Health and Human Services, Centers for Disease Control and Prevention (CDC).

In 2010, there were 59,344 nonfatal firearm injuries reported nationally (Department of Health and Human Services, 2012). This increased more than 11,000 from 2009, where the Department of Health and Human Services reported 48,158 incidents of non-fatal firearm injury. This seemingly reverse relationship between fatal and nonfatal victimization trends may be due to advances in the medical field, as hospitals are able to produce more viable outcomes for gunshot wound patients.

In New York State, firearms accounted for an average of 63.6% of all murders between 2002 and 2011, according to the *Crime, Arrest, and Firearm Activity Report*, the number of nonfatal shooting injuries reported by the 17 IMPACT counties in 2011 was 799, down from 819 in 2010 and totaled 64 fewer victims than in 2006 with 836 nonfatal injuries (Figure 3). Overall, the incidence of non-fatal victims of firearm injury has remained steady over the last five years, with the exception of 2006 with the highest number of non-fatal injuries. Between 2006 and

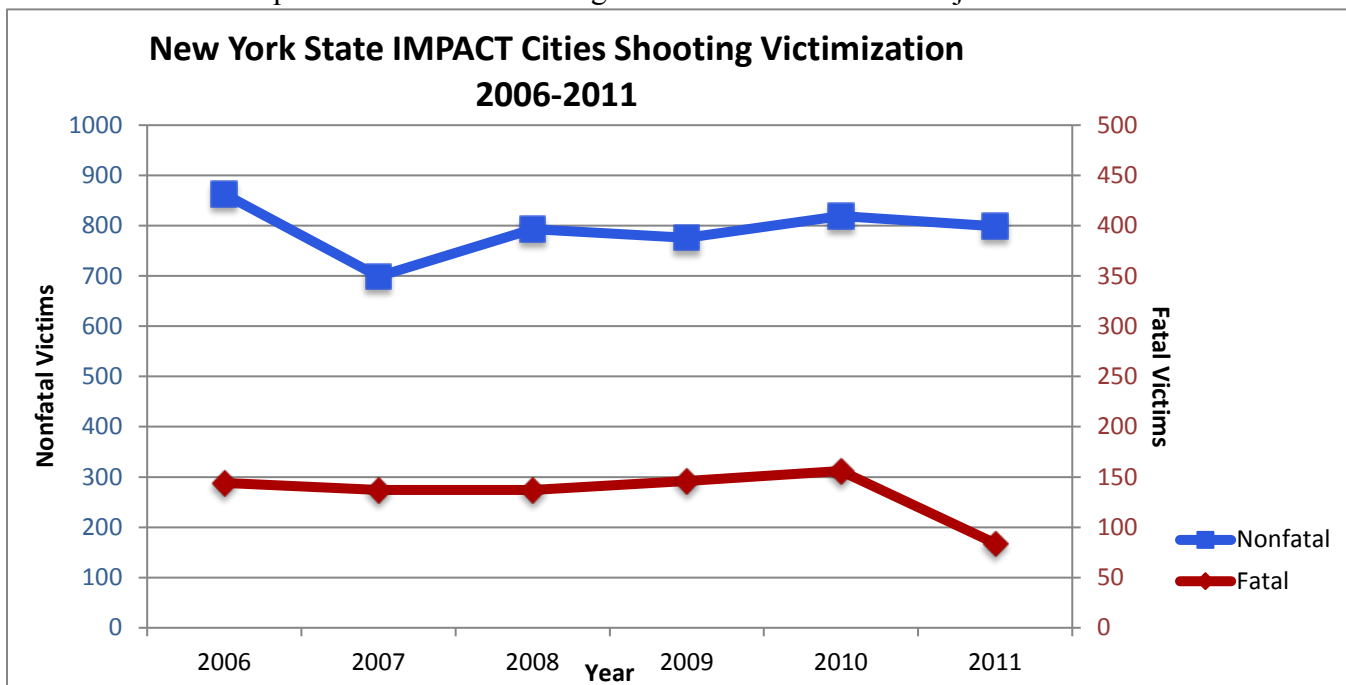


Figure 3: Fatal and Nonfatal shooting victims in New York State IMPACT counties, retrieved from DCJS.

*Complete list of IMPACT counties can be found on page 5 of the *New York State Criminal Justice 2009 Crimestat Report* at <http://criminaljustice.state.ny.us/pio/annualreport/2009-crimestat-report.pdf>

2010, the number of fatal shooting injuries remained around 140 to 150 deaths each year, before dropping to 84 firearm deaths in 2011. Though these recent data demonstrate a decreasing trend in shooting victimization, the number of shooting victims statewide in 2012 had already reached 172 by March, with 15 of those injuries being fatal. At the same time the previous year there had been only 120 victims resulting in 12 fatalities (DCJS, 2012).

Between the years 2006 through 2010, shooting injuries in New York State had fatal outcomes an average of 15.4 percent of the time, while in 2011 this dropped to 9.5% of shooting injuries being fatal (DCJS, 2012). In terms of firearm-related deaths, New York remains in the lower 20th percentile compared to firearm homicide rates of other states (Firearm & Injury Center at Penn, 2009, p.5).

Local Statistics

Focusing further on Rochester, New York, the Division of Criminal Justice Services reports an average of 43 homicides in Rochester annually since 2002. Compared to the state rate of about 64 percent of homicides by firearms, 74% of Rochester homicides from 2002 to 2010 were due to shootings. This number reached just over 82% in 2009, and decreased to 45% of homicides involving firearms in 2011. The total number of annual shooting injuries in Rochester reached a recent peak in 2006, with 276 victims that year. From 2006 to 2010, an average of 16.4% of shootings resulted in fatalities: 1 percent higher than the statewide average.

Researchers studying crime in Rochester estimate an average of 185 shooting victims each year between 2004 and 2011 (Duda & Klofas, 2012). In recent years, however, the trend of both fatal and nonfatal shooting victimization in Rochester generally appears to be decreasing. In 2006, there was a peak at 242 nonfatal and 34 fatal shooting injuries, while 2011 presented a recent low of 129 nonfatal and 14 fatal victims, shown in Figure 4 (DCJS, 2012). Similar to statewide patterns, the most current data on

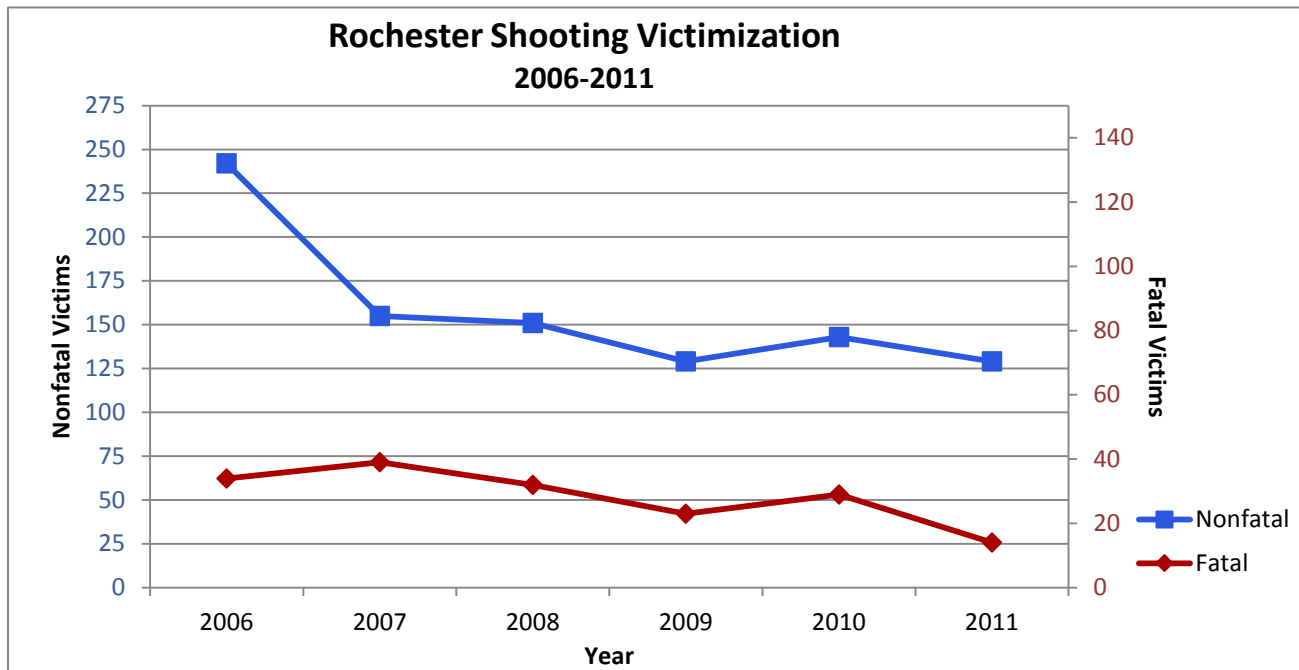


Figure 4: Fatal and nonfatal shooting victims in Rochester from 2006 to 2011. Data from DCJS, 2012.

shootings in Rochester have not followed the decreasing trend. By June 1 2012, there were already 70 reported shooting victims, compared with a total of 40 victims by the same date the year before (Monroe Crime Analysis Center). Despite the number of shooting injuries nearly doubling from the previous year, both of these time frames each yielded 6 fatalities as a result of these incidents.

In general, the annual number of shooting victims in Rochester has gone down, along with the number of homicides involving guns and the proportion of shootings that become fatal. The existing downward trend in shooting victimization may in part be due to improved crime analysis practices and proactive policing strategies. In recognizing this, however, gun crime in Rochester still remains a large problem in the community and a top priority for law enforcement.

Circumstances Surrounding Gun Use

While the incidence of gun violence provides a necessary background piece, it is key to understand the circumstances surrounding gun use. To provide for effective proactive policing tactics, a better understanding of the factors involved is important to combat these crimes. This can be achieved by examining the events leading up to the shooting, the persons involved, and the circumstances surrounding the incident. Being aware of these details can help crime analysts and law enforcement agencies work further to prevent shootings.

Guns and Crime

Crimes involving firearms are widespread in severity, from murder to criminal possession. Murder and nonnegligent manslaughter are defined by the Federal Bureau of Investigation as “the willful (nonnegligent) killing of one human being by another.” As mentioned, firearms account for around 68 percent of all murders nationally. On another level, guns are present in about 42 percent of robberies and 22 percent of aggravated assaults nationwide (National Institute of Justice, 2010). Although these crimes are reported as involving a firearm, there is not always a shooting injury as a result. However, a small number of shootings are the result of a “robbery gone bad.” In 2008, the Bureau of Justice Statistics (BJS) reports 25 percent of injuries from completed robberies to be due to a firearm (BJS, 2011, table 66). This percentage is up from the 1990’s, when around 16 percent of all robberies involving firearms resulted in an injury (Perkins, 2003, table 8). For crimes of rape and sexual assault, the use of firearms has been almost negligible on a national level, amounting to 1 percent or lower in the most recent years available (BJS, 2007, 2008). Other crimes involving firearms include reckless endangerment, prohibited use of a weapon, and criminal possession of a weapon, but do not produce any shooting-related injury.

Figure 5 below compares firearm crime in Rochester, New York State, and the nation.

As can be seen below, Rochester far surpasses the other two jurisdictions in crimes involving the use of a firearm. On average, 47% of robberies in Rochester involve firearms

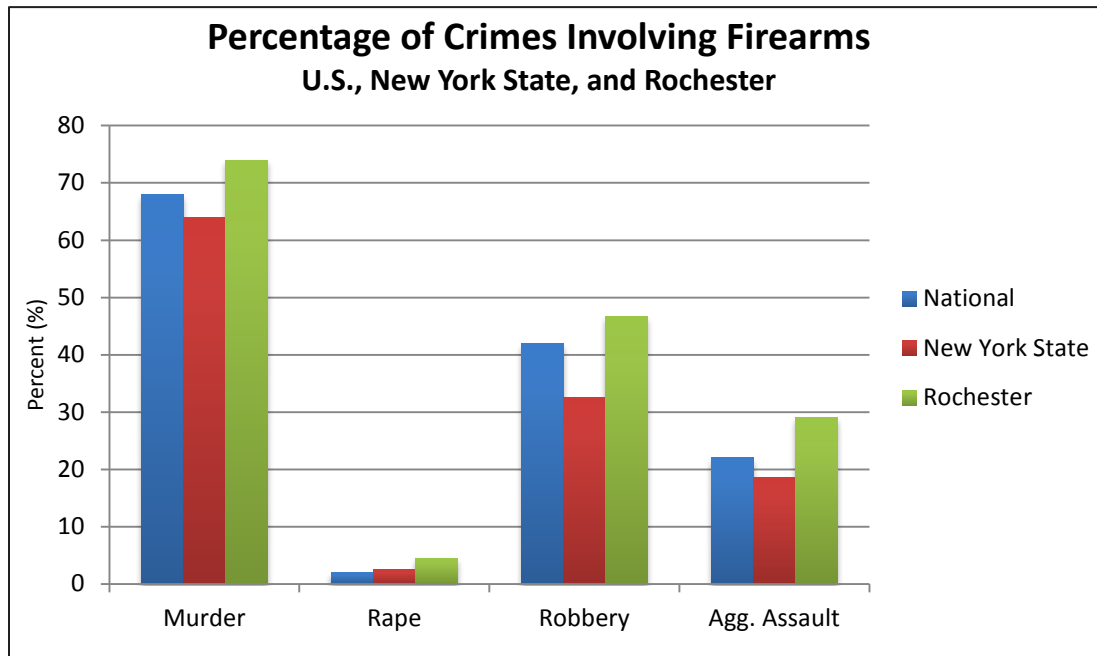


Figure 5: Crimes involving firearms separated nationally, statewide, and locally. National data from FBI's Uniform Crime Reports. State and local data from DCJS *Crime, Arrest, and Firearm Activity Report* (2012) IMPACT counties. Numbers based on period between 2006-2010.

(including 55% in 2005 and 2006), which is the highest rate of armed robberies in the state.

Compared to the low proportion of rapes reported to involve firearms nationally, rapes in Rochester are reported to involve firearms up to 6 or even 7 percent of the time. In the early 2000's, aggravated assaults involved firearms in almost half of the cases in Rochester, while in recent years this proportion has dropped to under a quarter. This decreasing trend of firearm use in Rochester crime has been displayed in firearm-related robberies as well.

Figure 6 below shows a comparison of three similarly-sized IMPACT cities for these crimes in 2011. Regarding homicide, Rochester's firearm percentage has historically been on par with that of Buffalo until an uncharacteristic low in 2011. Even accounting for inconsistencies in

Albany due to so few incidents, Rochester rates greatly surpass the average of firearm murders and gun use in other crimes for this city. Prior to 2011, the average percentage of firearm-related crime in Rochester had been higher than both of these cities, most notably in robberies and aggravated assaults. While 2011 exhibited a recent drop in gun use, 2012 has already seen an increase in firearm-related violent crime (DCJS, 2012). To better understand the nature of these crimes, it is important to look closely at the individuals involved along with certain situational factors in order to work to prevent further shootings.

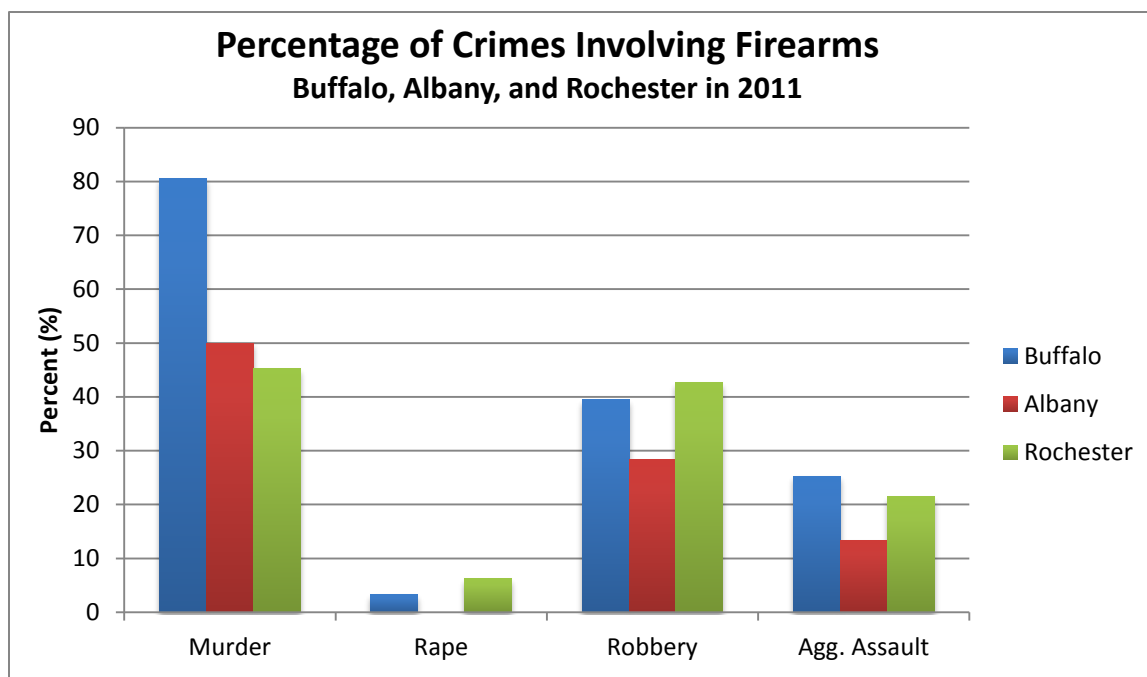


Figure 6: Crimes involving firearms in Buffalo, Albany, and Rochester, NY in 2011. Data from the *Crime, Arrest, and Firearm Activity Report* (DCJS, 2012).

Situational Factors: Participants of Shootings

Researchers have traditionally analyzed both victims and offenders of shooting incidents by specific demographics: gender, race and ethnicity, and age. In much of the literature on gun violence, young people are frequently discussed in relation to firearm use and victimization. Upon examining these characteristics further, “gangs,” or similar delinquent groups, are often mentioned as major catalysts for such youth violence. These delinquent youths have been said to make up a large part of the problem of firearm-related violence. In 2010 in Rochester, “63 different gangs were represented in violent crimes and 25.8% of shooting victims were gang involved. An additional 85 gang members were arrested for criminal possession of a weapon in 2010” (personal communication, MCAC Analyst, June 5, 2012). While studying gang-related violence, Bullock and Tilley (2008) observed that “gang members carried firearms for different reasons that were partly protective, partly symbolic and partly instrumental for the commission of violent crime” (p. 39). Spano, Pridemore, and Bolland (2011) studied youth offenders of firearm-related violence and found that exposure to and previous participating in violent crime increased the likelihood of youth gun carrying. Watkins, Huebner, and Decker (2008) summarize characteristics of violent firearm offending, concluding “juveniles were more likely to carry and fire a gun...; gun behaviors among juveniles are largely driven by gang membership, while ready access to guns, fear of the street, and the risks of arrest influence adult behaviors” (p. 674).

Bullock and Tilly (2008) describe the victims and the suspected perpetrators of gun violence as having similar attributes: “mainly young, black or mixed race males, who had extensive criminal records” (p. 40). Wells and Chermak (2011) further discovered that prior drug or illegal firearms offenses in particular increased the chances of experiencing gun victimization. Other research has shown that typically four out of five victims of both fatal and nonfatal gunshot wounds are male (Zawitz & Strom, 2000, p. 1). Martin et al. (2012) goes further

explaining, “adolescent and adult black men as well as individuals from lower socioeconomic standing are disproportionately affected by firearm injuries and experience worse outcomes” (p. 1197). According to Wellford, Pepper, & Petrie (2004), young males are an even larger percentage of firearm-related homicide offenders than homicide victims. These demographics may be further studied to examine why certain groups appear to be more at-risk than others. Understanding this helps to identify groups that are more at-risk for firearm violence than others.

Situational Factors: Weapons Involved

In investigating both juvenile and adult shooting cases, the majority of crime guns are often discovered to be illegally obtained. The most common means by which perpetrators obtain these guns are illegal markets, theft, or a friend or family member (Wellford et al., 2004). In a study done by Limber and Pagliocca (1998), juveniles reported obtaining nearly 40 percent of handguns from friends, and another 37 percent “on the street.” According to this study, handguns were much less likely to be obtained from a relative (13.2%) or a pawn shop (7%) (pp. 23-24).

In terms of gun type, handguns are the weapon of choice by the majority of offenders. Handguns account for about 82 to 88 percent of all firearm-related crime nationally, while the remainder involves shotguns at 14% and rifles at 4% (BJS, 2011, table 66; Zawitz & Strom, 2000, p. 4). The Senior Crime Research Specialist of Monroe Crime Analysis Center (MCAC) attests that crime in Rochester is similar to these findings (personal communication, 2012). Around 85 percent of shootings and armed robberies in Rochester involve handguns, and the majority is not acquired through legal means. There is also found to be a strong relationship between gang involvement and gun use. Gangs often have “community guns,” which may be one or two guns kept for shared use between members of the gang. When a weapon is needed, someone is told to run and get *the gun* to be used for the group. This makes the weapons harder

to track, as guns are passed from person to person or stored in one central location, and is even more dangerous when a number of individuals have access to the firearm.

The most problematic gun crimes are not often committed with legal and registered firearms. Gun violence most commonly involves illegally bought or stolen guns, used generally by the highest offending group of males between the ages of 14 to 25. These crimes are typically concentrated in other areas of high crime, and usually involve participants involved in other criminal activity.

Causes of Gun Violence

Not only is it important to know who is involved in firearm violence, it is also necessary to understand the causes of such incidents. In a 2000 analysis, firearm homicides were found to occur as results from arguments (28% of homicides), during the commission of another crime (19% of homicides), and result from “juvenile gang killing” (7% of homicides). (Zawitz & Strom, 2000, p. 4). Local criminologist John Klofas, PhD, conducted a study in 2002 of Rochester homicides (Figure 7), researching the causes

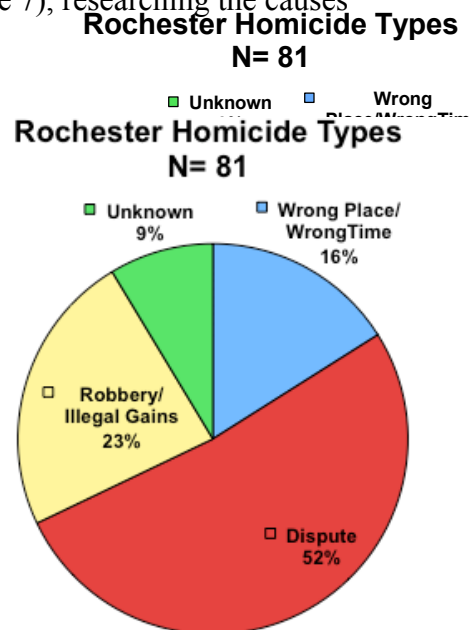


Figure 7: Causes of Rochester homicides 2000-2001 (Klofas, 2002).

leading to these incidents. Since gun violence is found to have similar attributes to homicides, these findings are likely to be similar to other firearm-related crimes. This chart shows that over half of the homicides in Rochester from 2000 to 2001 were dispute-related, which remains true in 2012. Both shootings and homicides are most often found to involve people who know each other, rather than a random act involving a stranger. Dispute-related circumstances included “personal arguments” at 34 percent, domestic disputes at 24 percent, and drug-related disputes making up 39 percent of incidents (Klofas, 2002). The Milwaukee Homicide Review Commission (2010) reports that “nearly 60% of homicides are precipitated by another crime, usually robbery or drugs.” Further, Cooper and Smith in 2011 found “gun involvement in homicides resulting from arguments [to have] remained relatively stable from 2000 to 2008, [during which guns accounted for] about 60% of homicides resulting from arguments” (p. 26).

Thus, experts suggest that the majority of shootings typically involve people who are acquaintances- “not necessarily friends, but not necessarily strangers” (personal communication, Senior Crime Research Specialist, MCAC, 2012). These incidents may be results of ongoing disputes involving drugs, gangs, or romantic jealousy. He goes on to describe some of these disputes as stemming from a simple conflict, such as one person feeling disrespected by another, or an argument over the way someone was driving (personal communication, 2012). These conflicts escalate especially when rival gangs are involved and members of each side become caught up in retaliation, which can eventually result in a homicide.

Along these lines, shooting can almost be seen as alternating “punches” between two sides of a fight. At times, firing at someone might not even be an attempt to kill as is commonly perceived, but may instead be a warning sign not to “mess with” someone. In this way, shooting may be the new punching as some are using these guns not looking to kill, but as a method of

intimidation and a way of “getting back at” somebody. However, one mistaken (or bad) aim can result in an untimely death. Typically, these shootings are not random acts of violence, but rather often result from two or more people involved in an ongoing dispute, and are usually known to law enforcement. Knowing this, and acknowledging that most of these crimes involve people who know each other, a logical step would be to create a way of tracking and sharing dispute-related information within the Department for the purpose of providing officers information to obtain a higher clearance rate for these crimes, and prevent potential shootings from occurring.

Law Enforcement Outcomes

Unfortunately, clearance rates in shootings (particularly non-fatal) tend to be low, as this is the case in many cities across the country. This is in part due to uncooperative victims as well as general community cautiousness in sharing information with the police. Initial information can be minimal and usually comes from witnesses or persons with knowledge. When investigators are not provided with sufficient information for solving a crime, it may be necessary to turn to an alternate source rather than relying on the testimony of onlookers. However, without the input of witnesses and neighborhood residents, it is often unlikely that the case will be solved.

Police may become aware of initial smaller-scale altercations, but little may be done about these relatively minor instances. It may be necessary to re-examine the circumstances of these conflicts. We know that the majority of shootings and similar violent crimes are results of ongoing disputes, and because these incidents are often not simply random occurrences, *it may be possible to examine the string of events leading up to a serious incident to either predict or identify the participants of a shooting*. Officers may have a general knowledge about violent crime in their area, or even a general idea of what factors into these crimes, but it is also

important to be aware of the larger picture of these crimes and the disputes involved. This can be acquired by developing a method for recording and tracking ongoing disputes as well as other relevant information for such crimes.

Chapter 2

Databases as Gun Violence Prevention

Prevention Techniques

In today's society, the prevalence of gun violence remains a pressing concern for law enforcement agencies and crime analysis centers alike. Various programs and interventions have been put in place to reduce the violence. Educational interventions, advances in firearm technology and microstamping, and stricter gun laws are several measures previously suggested to prevent potential violent incidents (Wellford, Pepper, & Petrie, 2004). In an effort to remove illegal guns from the street, gun buyback programs have been implemented in cities across the U.S., offering an incentive for anyone turning in these weapons. However, evaluations have shown that these programs rarely produce a significant reduction in violence; typically they do not get weapons off the streets that are used in crimes (Makarios & Pratt, 2008). Gun buyback programs ignore the risk principle, as we know that people living particular lifestyles have a significantly higher risk of becoming either a victim or offender of a crime. Sherman stated, "Nothing in the structure of gun buyback programs attempts to focus the intervention on the risk" (2001, p. 19); thus, when thinking through violence prevention, the level of risk should be addressed.

Perhaps the most conceptualized gun violence prevention programs to date are the Ceasefire programs in Boston and Chicago and other similar interventions, exercising strategic problem-oriented policing to combat the illegal gun market and gang violence in the areas (Braga, Kennedy, & Piehl, 2001, p. 27). Programs such as these address the major crime problem head-on, rather than expending efforts across the general population. In order for these programs to be most effective, departments must be thoroughly aware of the issues at hand, and have a substantial understanding of the causes and how to actively prevent further crime from happening. This knowledge is obtained through extensive analysis of all relevant information known regarding the incidents of interest. In this way, policing strategies are evolving from street-level reactive measures, to data-based proactive crime prevention techniques.

Crime Analysis

An increasing number of Criminal Justice agencies across the country are beginning to identify the many advantages of extrinsic statistical analysis and in-depth research. Law enforcement agencies have more recently begun to rely on crime analysis in daily policing practices, and some have begun to establish separate structures exclusively for analyzing crime data. The National Institute of Justice (NIJ) advises that valuable partnerships form when practitioners work alongside researchers to design, implement, evaluate, and revise intervention programs. These partnerships rely heavily on “collaboration, feedback, innovation and compromise” to create an effective Action Research model (NIJ, 2010, The criminal justice action research model section, para. 2).

Establishing a close relationship with crime analysis allows law enforcement personnel to gather a “bigger picture” of what is happening in their jurisdiction, rather than relying only on what they experience along their area of patrol. Prior to having separate crime analysis centers,

several sworn officers were usually responsible for the analysis of cases in their area. In recent years, these positions are being turned to civilian analysts, with the ability to focus solely on the collective analysis for the entire surrounding area. These analysis centers incorporate crime mapping, crime pattern detection, weapons tracing, identifying personal networking ties, and more in order to provide law enforcement with actionable intelligence. As explained by the Senior Crime Research Specialist of Monroe Crime Analysis Center (MCAC), allocating a team specifically responsible for analyzing all data within a jurisdiction provides the ability to bring information to areas and personnel that may not have had access before, and “arm police officers with the most important information to make the most out of their time” (personal communication, 2012).

The fusion of crime analysis and policing has made way for better-informed, data-supported decisions and more effective proactive policing tactics. Using the findings of crime analysis, police departments can better identify any specific problems at hand with data support. Incorporating the findings, police can further understand the core of disputes and causes of certain crimes, and be aware of any crime patterns that may be of interest. With this knowledge, law enforcement can take a more educated approach to crime prevention, and propose informed prevention procedures to allow for early interventions, identifying potential suspects or victims, or developing tactical strategies in policing. Further analysis can then be used for “(1) testing and validating police activities to develop policy and program guidelines based on best practices, and (2) careful monitoring of outcomes to ensure the program is working” (NIJ, 2010, The criminal justice action research model section, para. 8).

Proactive policing techniques have proven to be effective in various cases. This method may partially account for the overall decrease in violent crime in New York City and other areas

over the years (Levitt, 2004; Zimmer, 1990). In order to successfully prevent crimes before they happen, departments need to have as much knowledge as possible about the situation. The Senior Crime Research Specialist of MCAC attests that these proactive procedures are extremely useful in tackling property crime (personal communication, 2012). The number and frequency of these crimes allows analysts to more readily recognize any patterns or characteristics that may be valuable to law enforcement. However, applying these same analytic techniques to gun violence and violent crime in general has proven to be more difficult. Incidents of violent crime typically occur at lower rates than property crime, making it harder to quantify and detect meaningful trends in a short amount of time. To provide for an adequate data set, it is necessary to examine these crimes along several years. In considering the number of cases within an extended period of time, the amount of data to be analyzed is substantial and difficult to work with. To account for obstacles such as this, multi-variable databases have been developed to house unlimited amounts of data for extensive logical analysis.

Existing Databases

As data analysis is becoming universally relied upon in numerous professional fields, the need to adopt a reliable system for managing large amounts of information is growing rapidly. Databases have become a widely used structure enabling users to combine, organize, filter, and query any amount of data with ease and flexibility. Access to these databases may range from being internationally implemented, to local or private use. Below, select databases are described and discussed as they relate to crime analysis.

International Classification of Diseases

One current internationally applied system is the tenth revision of the International Classification of Diseases (ICD-10). The ICD-10 is utilized in the healthcare field for the standardized coding of diseases and other health problems around the world, and “provide[s] the basis for the compilation of national mortality and morbidity statistics” (World Health Organization [WHO], 2012a, International Classification of Diseases [ICD] section, para. 2). This allows practitioners around the world to “compare and share data in a consistent and standard way... [and] facilitates the collection and storage of data for analysis and evidence-based decision-making” (WHO, 2012b, Why is the ICD important? section, para. 1). While development of an eleventh revision is projected for 2015, the United States is in the process of upgrading from the currently used ICD-9 (Ledue, 2010). This is important because establishing a universal standard for classifying this information sets a common ground for all agencies within the field to share and interpret each other’s findings on health-related issues. If this information were also shared with criminal justice departments and analysis centers, it could be particularly useful for violent crimes to provide better understanding of the severity of the injury, and possibly an indication of intent.

National Violent Death Reporting System

On a national level, the Centers for Disease Control and Prevention (CDC) have created a more specific system for the collection and documentation of incidents of violent deaths. The National Violent Death Reporting System (NVDRS) is “a state-based surveillance system that collects facts from different sources about the same incident” which are pooled into a useable database (CDC, 2011, National Violent Death Reporting System, para. 3). Entries in the NVDRS are incident-based, and include all victims and suspect information associated with a given incident in one record (CDC, 2008). Before this development, all incident information was stored

in different areas- from police reports, to hospital and coroner reports, to legal records. With the creation of the NVDRS, all of this information is now collected and combined into one comprehensive reporting system that provides a more complete picture of an incident. The goal of this system is to link the “who, when, where and how” of these incidents to provide insights about “why” they occurred.

The National Violent Death Reporting System was created in 2002 and began collecting data from seven states in 2003 (Karch, Logan, & Patel, 2011). Six more states joined in 2004, four in 2005, and two more in 2010 for a total of 19 states. New York State does not currently use the NVDRS, but the system continues to serve as a model for standardized incident reporting in various jurisdictions. The knowledge derived from this system will be able to provide communities with a clearer understanding of violent deaths in order to better prevent them. There has historically been a large gap in information about these violent incidents, but “as NVDRS data become available, state and local violence prevention practitioners [will be able to] use it to guide their prevention programs, policies, and practices” (CDC, 2011, National Violent Death Reporting System, para. 3). As declared by the CDC, expansion of the NVDRS “will increase knowledge about where the problem of violent death exists, the groups who are most at risk, and trends over time. This system can provide a foundation upon which to build many activities and processes necessary for successful violence prevention” (2011, National Violent Death Reporting System, para. 10).

Milwaukee Homicide Review Commission

Focusing further on the prevention of violent incidents, the Milwaukee Homicide Review Commission (MHRC) “builds on existing theory and uses cutting edge practices to create and implement effective cross-agency prevention approaches” (MHRC, 2010, p. 5). The MHRC

introduces a “comprehensive and collaborative process” for reviewing homicides and nonfatal shootings (MHRC, 2010, p. 8). The system provides reviews of homicides, supports the implementation and evaluation of recommendations from these reviews, and maintains a comprehensive database on homicides, nonfatal shootings, and near fatal domestic violence incidents.

The MHRC incorporates comprehensive and “real time” homicide and nonfatal shooting data from courts, police, and elsewhere in the community. “The database includes family history, employment, social service utilization, criminal history and community corrections supervision status for the victim, suspect, and witness” (MHRC, 2010, p. 11). It also includes gun trace data and location history information for the incident location. The use of the database allows data to be compared over time and across agencies. With this information agencies can better analyze and interpret trends and statistics in order to formulate action plans based on the data presented (MHRC, 2010).

A primary concern for the MHRC is *why* a problem exists. The success of the program relies on first identifying any trends, gaps, and needs, and tailoring data-driven solutions “directed at the underlying conditions that create the problem” (MHRC, 2010, p. 8). The MHRC emphasizes a collaborative, cross-agency effort in violence prevention. The aim of the commission is to gain an understanding of the causes and risks associated with major problems in the area through strategic problem analysis, to “develop innovative and effective responses and prevention strategies,” and “help focus available prevention and intervention sources” (MHRC, 2010, p. 6).

As data become more prevalent, the need to organize the data in a meaningful way becomes even more pressing an issue. While some jurisdictions, like those above, have begun to

work through the issues to determine the most useful way to analyze and use data, there are many others who have yet to even begin to think about database creation.

Essential Database Elements

Each of the data-tracking programs discussed adopts a regulated and universal system of documenting data. This ensures the reliability of consistent information within the data set. Not only is it key to maintain regularity within the data, it is also important to establish a foundation of well thought out items to be recorded in the database.

In the area of shooting injuries and gun crime, only a handful of police departments employ a system specifically for tracking and analyzing these data. Most jurisdictions collect general information on shootings along with other violent crimes, but the data are not commonly tracked in a single database. When there is a tracking system in place for shooting injuries, it has been typically run by health organizations like the CDC or San Francisco Department of Public Health, rather than a law enforcement agency (National Fatal Firearm Injury Reporting System [NFFIRS] Workgroup, 2001). In addition, some of the reports may be completed and inputted by various individuals, creating a higher chance of subjective inconsistencies (State of Alaska, Section of Epidemiology, n.d.). In many of these current systems, data may also only be inputted once, with little or no update of the information as time goes on.

The main focuses of many existing firearm and violent injury reporting systems circulate around the findings of past research. Commonly shared fields include incident information (date, time, jurisdiction), location information (location type), victim and offender information (relationship, substance use, demographics, criminal history), weapons information (type, caliber, gauge, make), and circumstantial information (law enforcement-related, drug-related,

gang involved). Some shooting databases are more inclusive than others. The National Fatal Firearm Injury Reporting System (which eventually turned into the National Violent Death Reporting System) emphasized the following elements: incident type, accident/suicide circumstances, location type, address, date of injury and death, place of death, investigating police agency, victim residential address, victim and suspect age, sex, race/ethnicity, relationship, presence of alcohol/drugs, and firearm type, make, model, caliber, and gauge (NFFIRS Workgroup, 2001). In Milwaukee, main focuses remain on targeting specific individuals or types of individuals, behaviors and activities, geographic areas, and types of places, and generate policy recommendations based on the findings (MHRC, 2010).

Tracking Personal Information

Review of existing databases, research and knowledge of the factors surrounding gun violence can help to identify important elements to include in a database of shootings. In 2011, Papachristos, Braga, and Hureau examined fatal and nonfatal shootings in Boston and found that “the probability of gunshot victimization is directly related to one’s [social] network distance to other gunshot victims.... The closer someone is to a gunshot victim, the more likely that person is to also be a gunshot victim” (p. 2). The study also found that individuals are placed at an even greater risk if they are younger, have a high number of gang members in their social network, or are gang members themselves. In a study done by Spano, Pridemore, and Bolland (2012), it was found that the intersection of exposure to violence and engagement in violent behavior had the most significance in juvenile gun carrying. Wallace (2009) also concludes that juvenile firearm carrying is most influenced by delinquent peers, friends, and gang membership. These three studies provide strong support for including such relational networking data within a database. These studies further highlight the notion of risk and that some people are at higher risk than

others of getting shot or being the shooter, which is undeniably critical information for law enforcement to have access to. Understanding who in the community is at greater risk of criminal behavior has obvious effects on not only criminal justice agencies, but also on service providers.

As research finds that most of these incidents are dispute-related, it is necessary to gather more in-depth information on victim/offender relationships, as well as take a closer look into any previous disputes among participants. Oftentimes incidents during these ongoing disputes are known by officers, but there is not a consistent system in place to link these events together. Tracking information such as this will serve to help researchers, law enforcement personnel, and policymakers more thoroughly understand the factors fueling such incidents in order to propose informed prevention programs focused directly on the problems at hand. Boston's Operation Ceasefire incorporated this method by "applying quantitative and qualitative research techniques to assess the nature of and dynamics driving youth violence" (Braga, Kennedy, & Piehl, 2001, p. 1).

Criminal history and weapons involvement are also said to be related to the likelihood of a shooting victimization. Previous negative interactions with the criminal justice system are shown to increase the likelihood of becoming involved in a shooting (Wells & Chermak, 2011). Wells and Chermak found an even greater risk of gun victimization in individuals involved in illegal weapons activity. Capturing information regarding criminal history and case outcomes will thus be meaningful within a database.

As for offender characteristics, Spano et al. (2011) identify the intersection of exposure to violence and violent behavior as a key factor in youth participation in illegal firearm activity. Ratcliffe and Rengert discuss a potential victim/offender overlap in the coercion, retaliation and escalation of circumstances relating to "romantic interchanges," drug market disputes, and

routine illegal activities such as armed robberies (2008, p. 58). For these reasons, it is important to track all shooting participants' criminal history, domestic history, drug involvement, and personal history within a database.

Tracking Spatio-Temporal Information

Collating crime data based on geographic location and change over time is another useful tool for analyzing shootings. A study by Ratcliffe and Rengert (2008) examined patterns of “near-repeat shootings” in Philadelphia, PA. They found “elevated patterns of near-repeat shootings within 2 weeks and one city block of previous incidents” (p. 58). The study demonstrated a 33 percent increase in the risk of a shooting when compared to any other situation not within one block and two weeks after a shooting. This phenomenon of near-repeat shootings is speculated to result from “coercion, retaliation and escalation” of participants and those affected by the incident (p. 61). Papachristos, Braga, and Hureau (2011) also highlight the influence of neighborhood characteristics on the victimization risk of shootings. With this in mind, it is important to consider tracking the distance between victim, suspect, and incident addresses as well as merging records of other problems of violence in the area around that time. However, both Ratcliffe & Rengert and Papachristos, Braga, & Hureau contend that perhaps the most critical factors increasing the risk of shootings are the overlap of known problem areas and the social circle of the individual.

Influence of Street Culture

As expressed by Papachristos, Braga, & Hureau (2011) “a growing amount of empirical evidence suggests exposure to serious gun violence and risk of violent victimization is highly concentrated in extremely small geographic locations and within highly circumscribed

social networks” (pp. 3-4). While examining repeat incidents, Ratcliffe and Rengert (2008) attribute many shootings to personal disputes and instrumental crimes, as opposed to random violence. “The first is romantic interchanges. People sometimes resort to violence against a mate they fear they are losing or against the person who is intruding on their romantic turf. Others use guns to commit an armed robbery or other felony. Finally, guns are used to settle disputes in illegal activities such as illegal drug sales where the parties do not have access to criminal or civil justice systems to settle their disputes” (Ratcliffe & Rengert, 2008, p. 61). These factors are further explained as they relate to the “code of the street” in many of these areas. As Anderson (1999) and Ratcliffe and Rengert (2008) point out, the “code of the street” actively discourages respect for and cooperation with formal law enforcement and encourages the use of violence to solve personal disputes. The “code of the street” emerges where the influence of the police ends and personal responsibility for one’s safety begins (Anderson, 1999). This yet again drives the point that many of these shootings are between people who know each other.

Although many of these incidents are found to involve individuals with some type of relationship, research presents another situation as well. Ratcliffe and Rengert (2008) describe a situation of a shooting occurring during the commission of another felony such as a robbery, another common finding of repeat shootings in areas of routine drug activity. Understanding this, it may be necessary and helpful to identify and label the type of motivation for the shooting, or at least differentiate between instrumental and expressive motives for the incident. It would also be important to capture whether the shooting happened during the commission of another crime. Knowing the reasons behind these attacks could help track related incidents or detect patterns of shootings.

Summary of Elements

Risk factors for shootings overlap the many elements of homicide in general as described by Papachristos, Braga, and Hureau (2011). “Leading social scientific examinations of homicide victimization and offending generally focus on understanding ‘risk factors’ at the *individual-level* (e.g. age, gender, race, and socioeconomic status), at the *situational-level* (e.g. the presence and type of weapon, the presence of drugs or alcohol, and the role of bystanders or third parties during violent events), and at the *community-level* (e.g. residential mobility, population density, and income inequality)” (p. 3). With the factors just mentioned and the elements previously described, a shooting database can be built to cover nearly all of the important areas relating to shooting incidents, as supported by research. With a focus on persons’ information, incident location characteristics, and incident circumstances, an outline of a database can be created by expanding each topic to specific variables. These set variables will then serve to record any information worth tracking within the database for the overall purpose of analysis.

Chapter 3

Developing a Shooting Database in Rochester

Crime Analysis in Rochester

In recent years, Rochester, NY has been among leading jurisdictions to incorporate the function of crime analysis centers into everyday policing. Downtown Rochester houses the headquarters of the Monroe Crime Analysis Center (MCAC), which partners with the Rochester Police Department, Monroe County Sheriff’s Office, New York State Division of Criminal Justice Services, New York State Police, Monroe County Probation, and Monroe County District

Attorney's Office (City of Rochester, 2012). Funded by the Division of Criminal Justice Services (DCJS) as part of Operation IMPACT, a major responsibility of the center is to keep track of all crime data within the surrounding areas and report back regularly to the funding agency (DCJS, 2010). The analysis center serves to connect a number of agencies and share information that may be useful to various departments. Official meetings are held each week between crime analysts and the administration of the police department, yet day-to-day interaction happens between analysts and their assigned quadrant Captain to provide updates regarding any concerns in their area (personal communication, Senior Crime Research Specialist, MCAC, 2012).

The Senior Crime Research Analyst of MCAC describes the work done by the Center as primarily tactical-based. A major focus lies on the immediate problems in the area and the gathering of information for law enforcement to address these concerns. The goal of obtaining this information is to understand the core of disputes for early interventions and to identify potential suspects or victims of certain crimes. While the frequency of property crime makes pattern-based analysis a viable option, less frequent violent crimes of aggravated assault, armed robbery, and murder are also a top priority for analysis. Since many instances of serious violent crime are found to be dispute-related (Klofas, 2001), collecting as much information as possible about each incident may compensate for a relatively small data set. Gathering a substantial amount of information in a central location could then assist in the detection of a meaningful pattern of crime. With that information, certain situations may be identified early on and appropriate resources may be allocated in response to the issues found. As a whole, the Monroe Crime Analysis Center seeks to compile sufficient data to present to law enforcement as *actionable intelligence*, providing fact-based problems to act upon.

Pre- Rochester Shooting Database

As in many urban areas, gun violence has become one of the top concerns of the local police department in Rochester. Though extensive labor and resources are deployed to handle these incidents, there is currently no single system for tracking these efforts and information gathered from those efforts. As it stands, the existing structure for tracking shootings in Rochester is limited. Like some other agencies, the Rochester Police Department (RPD) keeps annual data of firearm-related fatal and nonfatal injuries. Any crime that results in either a fatal or nonfatal shooting injury is recorded in a Microsoft Excel spreadsheet. This includes the crime report number, incident date and address, victim name and date of birth, and suspect name and description, if known. A re-creation of the structure is shown in Figure 8.

Crime Report #	Incident Address	Incident Date	Incident Year	Crime Type	Victim Name	Victim DOB	Suspect Name	Suspect Description
12-012345	112 NORTH ST	03/12/12	2012	SHOOTING	JOHN SMITH	02/21/1983	JOHN JONES	NICKNAME "JJ"

Figure 8: Example of pre-2013 Rochester shooting database. All names, dates, and locations are fictional and written for the purpose of example only.

This basic spreadsheet currently serves to provide the department and administration with raw counts of shooting victims from the year 2000 onward. With this information, analysts are able to calculate trends across a period of time, yet little within the current database aids in the prevention and investigation of these types of crimes.

Gaps in Current System

To place this issue into perspective, we must acknowledge the general absence of truly inclusive shooting victimization databases within many jurisdictions across the country. In 2005, the National Research Collaborative on Firearm Violence was formed to outline a research plan in response to the findings of the National Academy of Sciences (NAS) the previous year. The agenda proposed to fill the gaps in research and data on gun-related crime, recognizing that “inadequate data and inadequate access to existing data are among the most critical barriers to understanding gun violence” (Weiner et al., 2007, Data and data access section, para. 1). The overarching themes of the workgroup’s recommendations for reducing firearm violence repeatedly stress the importance of centrally located reliable data, collaboration between agencies, and the use of qualitative data to support fundamental statistical analysis (Weiner et al., 2007).

In Rochester, the current system lists all shooting victim cases primarily for tracking the number of victims, but lacks additional information in order to be utilized as a major investigative and research tool. As discussed previously, there are a number of variables that should be included in a database to be used for the analysis of shootings. Many of the necessary variables cover personal information on the victim and suspect, particularly the victim/suspect relationship and individual history. The majority of other variables include information surrounding the incident circumstances, location, and outcome of the case. Gathering all of these pieces could play a key role in helping law enforcement and crime analysts pinpoint the underlying causes of these crimes towards predictive policing tactics to detect and prevent violent situations from escalating further.

As it stands now, existing documentation systems of shootings in Rochester and other cities only lightly graze the depth of impact they could have on current law enforcement and

public safety. With knowledge of the gaps in the current system and existing research on what more can be done, we can create a new database structure to systematically record all necessary elements surrounding shooting incidents in an area.

Developing a New Inclusive Database

Existing research tells us that perhaps the most important factors perpetuating gun violence involve interpersonal relationships, violent history, and the social environment of an individual (Papachristos, Braga, and Hureau, 2011; Wallace, 2009). However, none of these factors are tracked in the current Rochester shooting spreadsheet. In an effort to develop a structure that contains enough relevant information to fully comprehend the nature of local gun violence, the Monroe Crime Analysis Center partnered with a research team from the Center for Public Safety Initiatives (CPSI) of the Rochester Institute of Technology (RIT). This collaboration led toward the creation of an all-new database of shootings in Rochester, with a wide gamut of variables able to be recorded for each incident. The Analysis Center's willingness to work with a local university, even allotting their own resources to this task and welcoming research staff (many of whom are students) into their space for such a project is unprecedented.

Pre-Development

The first step in developing the new Rochester Shooting Database was to examine similar structures that had already been implemented in other areas. Other programs found to be most related to this project were the Milwaukee Homicide Review Commission (MHRC), the San Francisco Firearm Injury Reporting System (SFFIRS), and the Center for Disease Control and Prevention (CDC)'s National Violent Death Reporting System (NVDRS) (MHRC, 2010; San Francisco Department of Public Health, 1999; CDC, 2011). These programs brought to light

many variables that the present database is currently missing, and also provided proof that the tracking of this data was possible and valuable to collect. The most useful resource upon which to model the Rochester Shooting Database was found to be the CDC's NVDRS Coding Manual. This manual covers many of the missing areas in the pre- Rochester database such as personal historical information, personal relationships, and injury information.

Using the above resources, we formulated a list of all perceived logical elements to capture. This new list of over 200 variables was created and underwent a cycle of review to ensure both practicality and thoroughness. From an academic standpoint, one aim was to present responses in a mutually exclusive fashion to provide for the best coverage and analysis of information. A task on the practical side was to verify that all fields contained in the database had a reliable source from which to retrieve information. Another issue of practicality surfaced in how best to arrange the extensive list of new variables in a coherent manner. Furthermore, it was necessary to accommodate the one-to-many relationships that occur in real life, such as having multiple suspects or victims and multiple firearms within a single incident.

Overview

The new Rochester shooting database is really a shooting *victims* database, as it will only include incidents in which there was at least one individual who received a gunshot wound. To address the complexity of this subject matter, the layout of the Rochester Shooting Database (RSDB) is comprised of seven distinct areas made into separate "tabs" within a Microsoft Access file. In a truly collaborative manner, the Access file was created by an MCAC analyst with ongoing input from both CPSI researchers and MCAC analysts. The tabs created consist of *Incident*, *Victims*, *Suspects*, *Weapons*, *Circumstance*, and *Investigation* sections of the database. The Victims, Suspects, and Weapons tabs are capable of possessing a one-to-many relationship

with a single incident, meaning that there could be multiple victims, suspects, or weapons associated with one incident. In contrast, the Incident, Circumstance, and Investigation relationship remains one-to-one. The general structure of the tables within the database is outlined below:

I. Incident

1. Incident Categorization
 - a. Geographic Organization
 - b. Location Type
 - c. Temporal Organization
2. Charge Info
3. Additional Location Information
 - a. Census Data
 - b. Property Zoning
 - c. Occupancy and Ownership
4. Situational Dynamics
5. Location History
6. Detection and Response

II. Persons (Victims/Suspects)

1. Primary Information
2. Residential Information
3. Recent LE Contact Information
4. Victim/Offender Relationship
5. Injury Information

- a. Hospital Info
- b. Injury Location
- c. Type of Injury
- 6. Criminal and Victimization History
- 7. Personal Background

III. Weapons

- 1. Weapon Details
- 2. Firearm Ballistics
- 3. Property Recovered
- 4. Tracking Info
- 5. Ownership Info

IV. Circumstance

- 1. Crime-Related Elements
- 2. Dispute Elements
- 3. Drug Involvement Elements
- 4. Physical Altercation
- 5. Other Motives of Suspect
- 6. Victim Participation
- 7. Method of Suspect Travel

V. Investigation

- 1. Case Outcome
- 2. Judicial Process Details

3. Timeframe of Events

Function of the Database

The purpose of creating this database is to be able to consolidate all relevant information from all shooting incidents within the Rochester City limits. These cases will include all assault and homicide shootings, as well as incidents not regularly tracked including firearm suicides and self-injuries, and any law enforcement–related and legally justifiable shootings (which are not reported in the FBI’s Uniform Crime Reporting crime statistics).

As discussed in previous sections, arguably the most important factors to capture in this new database cover the incident location characteristics and personal history and relationship information of participants. Existing research finds that shooting victimization and offending are largely correlated with an individual’s social environment (Papachristos, Braga, & Hureau, 2011; Wells & Chermak, 2011; Spano, Pridemore, & Bolland, 2011) and that the majority of shootings are the result of interpersonal disputes (DiPoala, Duda, & Klofas, 2012). Therefore, it is all the more crucial to include this information within the database. Below is a run-through of the sections in the database and how each pertains to the identified areas for analysis.

Incident Information

As with any crime, it is important to track basic general information about an incident such as the time and date of occurrence, the type of crime committed, an identifiable case number, and any other department methods of classification. It is also crucial to include the reported number of victims, suspects, and witnesses, as well as if any weapons other than firearms were used during the incident. Under this category, other areas such as the status of the

case and initial detection type of the incident are recorded. This section will assist mainly in basic and temporal analysis and operational application.

Location

In existing databases, there is relatively limited information on the location of occurrence for individual shootings. For this database, information will cover all areas such as incident address, jurisdiction, census tract, zoning type, and type of location. Within this section, data will be broken down further to indicate if the location was business or residential, owned or rented, or within any known drug or gang area. In addition to this, we will record the number of calls for service at the location and other contacts with law enforcement within the previous six months. A primary purpose of recording this information is for geospatial analysis and identifying opportunities for proactive environmental prevention.

Victim & Suspect Information

The same grouping of characteristics is determined to be important for analyzing victims and suspects of shootings, so both tabs hold the same variables. These will cover several areas: individual demographics, personal background, criminal and victimization history, residence, and recent law enforcement contacts. In addition to this background information, fields are included to track injury location on the body, hospital aftercare, and the relationship and conflict history of the victim and offender. The last two areas mentioned are crucial to the database in that the information is not regularly recorded elsewhere and may be key to understanding the nature of gun violence.

Circumstances

The circumstances surrounding a firearm-involved incident may provide the most informative glimpse into why this violence occurs and where best to focus prevention efforts. This tab allows the ability to separate shooting incidents by the overall *cause*, and therefore further break down attributes based on the reasons perpetuating the violent act. This section will also provide a glimpse into other related factors such as the method of travel of the suspect, the role of the victim, and the immediate circumstances preceding the incident. This information will best inform violence prevention efforts focusing on the specific causes and reasons for these violent incidents.

Weapons Information

Fields within the Weapons Tab of the database will serve to identify the type and frequency of firearms being used in the sample of shootings. This can further be broken down by firearm use within certain circumstances or by type and severity of injury based on type and size of the firearm used. Additional variables describe the status of the gun, such as whether it was legally owned, reported stolen, and who the legal owner is (if identified). Also included in this tab is information on the recovery of physical evidence: whether any spent or live rounds or firearms were recovered at the scene or during the investigation. These can help indicate the number of shots discharged during an incident and speak to the type of firearm used.

Case Outcome

The final important piece of the shooting victims database resides in the Investigation Tab. Here, it is possible to input and trace the progress of each case nearly every step along the way. Using variables in this tab, an analysis can be run to calculate the percentage of shootings that result in an identification, arrest, or conviction. In addition to this, analysis can be done on

charges, sentencing, plea-bargaining, and the length of time between each stage in the judicial process. The majority of information within this section speaks to the judicial aftermath of assault and fatal shootings and their progress through the criminal justice system. Findings from the analysis in this area could serve to present an overall picture of the investigation outcome and distinguish any holes that may need added attention.

Development Process

The development of the Rochester Shooting Database began in January of 2012. The first task was to conduct a review of existing literature on firearm violence and victimization codebooks to gather all relevant variables into one place to later be turned into the database codebook. After nearly a year of revision, the coding variables were locked into place and given precise definitions and mutually exclusive and exhaustive response sets. This list was then given to MCAC's Crime Technology Analyst, who created an SQL server relational database and a frontend user interface for data entry with Microsoft Access. During this step, additional features were incorporated such as the ability to link to all Crime Reports (CRs) and Investigative Action Reports (IARs) and automatically pull previously coded incident information from the Department's record management system. An SQL query was later written that flattened the relational data into one table for analysis in SPSS.

Data Collection and Entry

Data Sources

The primary sources of information for the RSDB are the Crime Reports and Investigative Action Reports that the officers and investigators use to document the investigation

of the shooting case. Much of the Incident, Weapons, and Circumstance Tabs are completed using information from these reports. A second major source is the Rochester Police Department's electronic records management system, which is used to research location history as well as criminal and victimization history of victims and suspects. The Monroe County jail booking system is used for prior arrests in Rochester and the surrounding county, and is valuable for demographic and personal information and necessary for completing the Investigation Tab. Information from existing MCAC products is crucial to the completion of the RSDB as well. These resources include the calls for service database, gun tracking database, pawn database, gang database, and crime bulletins. Other resources used are the New York State Department of Corrections and Community Supervision (DOCCS), Rochester City Properties and Monroe County Clerk websites, ArcGIS, and Google Maps.

Coding Process

The initial input of information into the database was done by a team of coders: two of which were already working at the crime analysis center, and three were student researchers from the Rochester Institute of Technology's Center for Public Safety Initiatives (CPSI). The first goal for the project was to complete years 2010 through 2012 of shooting victims. To accomplish this, two coders worked on both ends of 2010 (one from January forward; the other from December backward) while two worked on both ends of 2011. Once both years were completed, all four coders worked on the 2012 cases to reach a total of 473 shooting incidents. This process was overseen by a CPSI faculty member who regularly met with the coders to discuss issues as they came up.

Upon entering a new incident, coders must link the corresponding crime report in .pdf format to the shooting incident in the database's user interface. This allows users to quickly open

any relevant reports for the respective case and enables many fields in the Incident Tab to be automatically populated from the department's electronic records management system (RMS). The remainder of the tabs and fields were manually entered as coders read through the cases and conducted research using the above listed sources.

Inter-Rater Reliability

When dealing with subjective material being interpreted by multiple coders, it is imperative to conduct tests to evaluate and monitor reliability between coders. This will ensure better credibility of the data being produced and can help identify areas that need to be strengthened or clarified. During the process of coding for the RSDB, one of the original coders was reassigned elsewhere and two new coders were brought on. This presented even more cause to conduct reliability testing.

The two inter-rater reliability tests that were used were Percent Agreement [$\frac{\text{\#agreements}}{N} * 100$] and Kappa [$\frac{Po-Pc}{1-Pc}$].¹ Percent agreement calculates the outright proportion of agreement of observations, whereas Kappa takes into account expected chance agreement. These tests were conducted at three stages throughout the initial phase of the database coding with the goal of identifying problem areas to train and steer coders to interpret variables in the same way. The first reliability test was done upon the entry of 100 total cases from the original three coders. To perform this test, one coder recoded 13 selected variables within ten cases from each of the other two coders. The responses of each coder were then used in the calculation of the above formulas. The second test was done at 250 cases after one of the original coders was replaced by two new coders. This was conducted in the same format with the same coder recoding 16 chosen

¹ **Po**: proportion of observed agreements

Pc: proportion of chance or expected agreements

variables from another ten cases from each of the other three coders. Based on the results from tests 1 and 2, focused coders' meetings were held with the project supervisors from MCAC and RIT to clarify and standardize interpretations of the more problematic fields. The third and final test during the first phase of the project was completed toward the end of the three-year shooting data period with 350 cases entered. For this test, three coders recoded two entire cases of one of the other coders, and the tests were run across all variables. The goal of this was to evaluate whether the meetings and focused training produced the desired results of similar outcomes. The following chart displays the results from each reliability test:

Inter-Rater Reliability Test #1	Inter-Rater Reliability Test #2	Inter-Rater Reliability Test #3
Mean % Agreement= 73.5 Mean Kappa= .53	Mean % Agreement= 85.42 Mean Kappa= .76	Mean % Agreement ² : N/A Mean Kappa= .72

Figure 9: Results of first three reliability tests from the first phase of the shooting database entry.

Target Percent Agreement= 80%

Target Kappa= .60

The figures in the chart above demonstrate the progression of reliability testing across the initial coding period. Accepted values for a strong Percent Agreement are at 80% and above, while the accepted values for Kappa should be over .60. It can be seen that the reliability score increased from below the target values from the first test to above the target values for the second and third. This increase can be attributed to the detection of problem areas in coding and

² Because more than two coders were being compared for the third Kappa test, STATA did not produce a Percent Agreement.

then holding a meeting among coders to discuss how to fix the discrepancies. These periodic coders' meetings worked to smooth out and clear up any problematic areas within the database by reaching a group consensus on how each variable captured should be interpreted. This feedback process aided in producing more consistent coding and therefore enabled stronger validity in the results.

Obstacles

Developing a Codebook

In addition to ensuring coder reliability, various obstacles have arisen at other stages throughout the development process. Some of the earliest obstacles surfaced during the compilation of the codebook. The challenge was to make the database as inclusive as possible without frivolous or unreliable variables. It was necessary to maintain a balance between complexity for the sake of inclusion and manageability for future coders. Some of the deciding factors for these criteria were based upon the theoretical value of fields and the realistic availability of information from MCAC. Variables that had little theoretical value or were not realistically accessible through available resources were cut from the codebook. Other variables were combined or broken apart as needed. "Address" and "Name" were originally captured as single fields, but were then separated apart by "Street Address," "City," "State," "Zip Code," and "Last Name," "First Name," "Middle Initial." Some of the fields added later on included contract killings, whether individuals are right or left handed, and involvement of rental cars.

One aspect that was important to avoid was redundancy in fields. Several fields were identified that could provide valuable information, but they could be better addressed in a different way. For example, a field was created in the original codebook which tracked whether a

victim or suspect had a previous alcohol abuse problem. However, this could be more easily and objectively covered in the arrest history section where the “alcohol arrest” field would be marked. Many fields could be eliminated completely and covered in a different field in order to avoid repetition.

For each variable tracked, a predetermined response set was written in the codebook. Some of these were free-form text or number responses, while others were a regular combination of NO, YES, and UNKNOWN responses. A select few of these fields had a set of categorical responses, but the goal was to provide a consistent set of responses to as many fields as possible.

There are almost a limitless number of fields that could provide interesting information, but many of these are not necessary. One difficulty was trying to decide which fields provided the essential information and which fields could be eliminated. An added complication to this process was determining what information was actually obtainable and if it could be tracked. For example, it would be interesting to know the education level of suspects and victims, but often this information is not retained anywhere within the department.

Arising Issues

One problem that was apparent prior to developing the actual database was linking multiple persons and weapons in one single incident. Many incidents have multiple victims, suspects, or weapons, each of which had to be reflected in the corresponding tab. In order to solve this, the database was developed so that multiple entries would be allowed for each tab. Each incident is given a unique incident ID number, which allows multiple entries in the same tab to be linked to the same incident.

Police reports provide the primary source of information for the shooting database. After reading a number of crime reports and investigation reports, it became apparent that terminology used in the database would need to match that of the Rochester Police Department. Consistency in the language of police reports and the database is essential to reduce confusion in coding. In addition, it also may be useful in the future for law enforcement personnel who reference the database for information.

Data Access

There are many fields that are not included in the database that would be ideal to track, but currently access to them is not available. Many of these fields would give further insight into the background information of involved persons or locations. Some examples of such inaccessible data include medical records, child protection services involvement, domestic incident history, district attorney records, mental health history, and employment history. Many of these fields can provide valuable information and may be useful for analysis purposes. However, much of this information is confidential, unavailable to MCAC, or in some cases impossible to track.

Data Collection

Many issues also arose in the collection of data to be included in the shooting database. One of these involved determining what different sources of information were available and which should be included in the database. MCAC has access to a variety of different resources that were available to coders, and the availability of these helped to determine which fields should be included. Resources such as the pawn shop tracking database were available, so a field was created tracking a person's history of pawn activity. If an accessible resource could provide potentially valuable information, it made sense to utilize these resources.

It was critical to eliminate as much subjectivity to the coding process as possible. This proved to be especially difficult early on in the coding of the database, especially as it related to various fields in the circumstance tab. It can be confusing to code many of these fields, as various people in crime and investigation reports often have conflicting stories. A victim may claim that they were robbed and shot at random by a stranger, but a witness may tell officers that the victim and suspect were overheard arguing about a drug deal just seconds prior to the shooting. For this example, coding the “dispute related” field would be difficult, and would come down to a matter of who to believe. In order to avoid this subjective decision, it was decided that if there was *any indication* that the condition exists, it would be coded as though it did exist. Otherwise there would be no consistency across coders or even for each coder individually. For this clarification, “any indication” meant that there had to be written evidence on a law-enforcement document that indicated such possibility of existence. This helped to take as much subjectivity out of coding as possible and make the data more reliable.

It is also important to recognize differences at the time of coding the incident and the time that the incident actually occurred. Various factors can change over time, and it is important that incidents are coded according to conditions at the time of the incident instead of at the time that it is coded. For instance, many changes can occur in geography, laws, personal information, etc. One example includes the criminal histories of victims and suspects. At the time of coding, a person may have a criminal history that is much more exhaustive than they did at the time that the incident occurred. Any criminal activity documented after the incident date is not included. It is important that each incident is coded according to the circumstances at the time of the incident.

One common obstacle that was encountered was finding police reports that were incomplete or missing from the RMS. This was especially true of homicide shootings. In these cases, some reports may be uploaded to the system, but appear to end suddenly in the middle of the investigation. This could mean that the investigation is still open, the remaining reports have yet to be uploaded, or the documents have been locked. In these situations, coders keep a running list of cases that will be revisited once access is granted by the department.

As coding moved towards the end of the year 2012 and into 2013, missing reports become a common problem for a different reason. Often more recent cases are still being actively investigated and there is little information on them. Sometimes it can take months before a shooting suspect is arrested and the case is closed. Moving forward with the database, it will be almost impossible to enter complete information for an incident immediately after it occurs as so little information will be available. After initial entry, time must be allowed to pass for further investigation. Even after the incident is coded, it will be necessary to check back after 30, 90, and 180 days to see if the case status has changed or if more reports have been added.

Later Additions

A few challenges that arose dealt with modifying the database after coding had already started. If a new field was added, incidents that were previously finished would have to be revisited in order to complete this new field. The biggest additions that fell under this were the “Victim Aggressor” and “Coder ID” fields. Victim Aggressor needed to be distinguished from “Crime Precipitated” for clarity, and “Coder ID” was added in to register which person coded the case. Somewhat more often, other smaller alterations were made early on. Some of the modified variables were “Victim Bystander,” “Dispute,” “Conflict History,” “Strangers,” “City Camera,” “Drug Territory,” and much of Shot Information. Most of these changes dealt with redefining the

coding instructions of the field for the sake of clarity. These changes presented more work for MCAC's Crime Technology Analyst who had to add all of these additional fields.

While coding, several unique circumstances were encountered that seemed like they should be tracked by their own field. For example, in several cases a suspect was mentioned to have been shooting while passing by on their bike in a manner similar to a traditional drive by shooting. Determining how many occurrences of such cases would justify creating a new field can be challenging. Usually too few of them exist to provide any usable data. The sample size would be too small to run any kind of meaningful analysis on them.

Law enforcement involved shootings are another rare situation which present various problems. Often law enforcement officers who fire their gun at a suspect are not struck themselves. They are not a shooting victim, but it would also not be appropriate to classify them as a suspect. Ideally the persons tab would include a dropdown option for choosing victim, suspect, or law enforcement. At this point it would not be possible to make this addition as the flat file is set up for only the "Victim" and "Suspect" options. These officers are currently tracked in the database under the weapons tab. A dropdown option was added under the "Owner is" field for law enforcement.

Lastly, RPD switched records management systems in early 2013. The database was set up to automatically populate fields and import CRs and IARs from the old RMS. The same fields continued to populate after the switch, however the CRs and IARs are now in a different format and are no longer able to be imported into the database in the same way. In addition, both RMSs will have to be searched for any cases after the switch occurred.

Functionality

Pulling the information out of the database for analysis presented some problems as well. The Access database allowed multiple entries for the victim, suspect, and weapons tab. However, this one-to-many relationship is not as easily reflected in any flat data file extract that could be used for analysis purposes. Each incident could have a varying number of victims, suspects, and/or weapons in each tab. For instance, many incidents have a single victim and a single offender in each tab, but one incident had one entry in the victim tab and seven entries in the suspect tab. This became an issue in determining how to pull the data into a spreadsheet that could account for all of these variables. It was determined that an Excel file would be created that would display up to four entries for the victim and suspect and three entries for the weapon tab. It was rare to encounter incidents that had more than four entries for the persons tab, and there were no incidents in which there was known information that could be filled out for the persons tab after the fourth entry. Similarly most cases did not involve more than three discharged firearms. In the cases where there is only one entry out of the three or four possible ones, the remaining unused entries are marked as "NULL." The few cases with more than three weapons or four persons had some of the information cut out. The best effort was made to include all persons and firearms in the flat file, but at the same time the flat file could not be made so large as to include all potential entries for only a few rare exceptions.

Benefits to Law Enforcement

Many prevention efforts in the past have addressed the danger of illegal gun *acquisition* or *carrying* within the general public (Wellford, Pepper, & Petrie, 2004). Rarely do these same efforts consistently show a direct focus on unique local issues related to gun *use*, with the exception of Operation Ceasefire and similar programs. Perhaps the reason for this void in

specific intervention is due to the lack of available information on these types of incidents. In many instances, case details other than the required general information are either less consistently recorded or stored in separate locations. Ratcliffe and Rengert (2008) attribute the availability of a database of shootings in the city of Philadelphia, PA to the success in examining patterns of violent, rather than the more common property, crimes. With all of the information stored in one place, it is easier to query data related to a shooting incident. Using information obtained through a quicker, central method will allow the opportunity to more easily identify patterns and trends of useful location, participant, and incident information surrounding these cases using crime analysis.

The availability of a centralized and easily accessed database will enable law enforcement to have detailed information on shootings. This information would otherwise be spread out over multiple sources and be time consuming for officers and analysts to obtain. Barber et al. (2000) identify the need for "one uniformly coded electronic database" for this exact reason (p. 1192). They detail how the information sought by law enforcement is available, but all of the necessary documents are stored in separate places and are often incompatible with computer programs and software. Once the shooting information is compiled in a centralized location, law enforcement personnel will be able to quickly access the data allowing for more effective investigation and analysis. In addition, a centralized database offers a more complete and accurate source of information. Kellermann et al (2001) found that important information can be lost when it is not compiled in a centralized location. When pulling data from only one of many sources, some incidents can be overlooked or missed. Some reports may have errors, inaccurate information, or even missing cases that are captured in other sources. A centralized

database which includes all possible sources of information is the most complete and exhaustive resource.

In addition to making law enforcement investigations more time efficient, there is other investigative information that the database may reveal. Weiner et al (2007) argue that there is "a need for better data and better access to data on firearm violence," so that "cause-and-effect relationships between firearms and violence" can be determined (p. 80). Information on the shootings in the city over the past several years will be compiled and available for review. Having this information all in the same place may lead investigators to more easily identify connections and relationships between cases, investigations, suspects, victims, locations, weapons, etc.

The shooting database can reveal patterns in shooting incidents regarding individuals, locations, and situations. Once these patterns are found, they are crucial to the overall goal of reducing and preventing further shooting incidents. Previous research has identified that victims of violent crime are also often the ones committing these acts of violence (Klassen & Vassar, 2002). The database will provide law enforcement with victim's criminal histories, prior victimizations, and instances where they are suspects in other shootings. Individuals who are repeatedly involved in shootings can be easily tracked through the database. It will also reveal victim and suspect relationship, so that disputes and conflicts between the two can be identified. This intelligence on the persons involved in the shootings can aid law enforcement in identifying current and potentially future shooting suspects and victims. This information will enable officers to take action that may prevent conflict escalation and further shootings or other forms of violence.

Locations of shootings are also documented in the database. This mapping allows law enforcement to identify geographic hotspots of where shootings are occurring. In addition, it can also reveal if shootings are being reduced or even displaced to other nearby areas (Kellerman, Bartolomeos, Fuqua-Whitley, Sampson, & Parramore, 2001). After these hotspot locations are recognized, interventions can be implemented to prevent future violence. Special attention can then be given to hotspots in a variety of ways. Officers will be more aware of dangerous areas, patrols can be increased in the target areas, more surveillance can be installed, etc. All of these practices can be utilized to reduce further shooting incidents in these locations. Importantly, these decisions will be made through the use of objective data.

Lastly, patterns in circumstances surrounding the shootings can be key in preventing future violence. The shooting database provides detailed information as to the situation surrounding the shooting. A few of the elements captured include whether the shooting was perpetrated during the commission of another crime, drug or alcohol involved, related to drug trade, gang involved, dispute related, a domestic incident, a drive by, involved a victim being an uninvolved bystander, etc. Tracking these circumstances enables law enforcement to identify why the shootings are occurring. For instance, if a large number of shootings are found to be gang involved and dispute related, law enforcement can target gangs and gang activity in an attempt to reduce shootings. Determining motivations for shootings can be extremely helpful in developing any interventions.

Developing effective interventions for the shootings is the overall goal behind the creation of the shooting database. The first step in reducing firearm violence is the collection of detailed information and data on shooting incidents; however, currently there are too few organizations that collect this comprehensive data to develop any kind of interventions (Library

Index, 2013; Egley, Logan, & McDaniel, 2012). Patterns revealed in involved persons, locations, and situations all help to shape what the most effective police interventions should look like.

After these trends are identified, then the most effective prevention plan can be formulated which addresses the appropriate problem areas. Criminal justice practitioners have stated that detailed information is the most essential tool in reducing gun violence, but currently it is severely lacking. The creation of the database hopes to provide law enforcement with this essential information which will better enable them to prevent further violence. Though the need for better information sharing does exist, it is also important to be aware of potential information overload, so it will be most useful to tailor information for dissemination specifically to each purpose.

Ongoing Function of the Database

The goal for the Rochester Shooting Database is to have it be integrated into the regular workings of the Monroe Crime Analysis Center and be used as a tool for the Rochester Police Department. Going forward, the plan is to task one person to continue to input cases as they occur. Once more recent incidents are included in the database, it will be necessary to ensure that the information is up to date as time goes on and new information is revealed through investigation. For this reason, a periodic review process will be created for every 30, 90, and 180 days after a case is initially entered to find any reports added after the case was last coded.

As the database continues to expand and is added to throughout the years, it is imperative for any and all coders and supervisors to directly follow the guidelines in the codebook. Additionally, it will be necessary to run reliability checks periodically and upon the start of each new coder, in order to maintain long-term reliability.

Though the scope of the database could easily extend back ten years, or as far as the documents are available, the current focus is on recent years. The first project to come out of the shooting database will be along the lines of a violent dispute intervention tool under the Smart Policing Initiative. For this project, the years 2010 to 2012 were identified as the period of interest to investigate disputes.

Future Steps

An early goal in the creation of this project was to make it adaptable to other departments. Many of the variables are able to be universally used, and others can be altered to accommodate specific departmental needs. The geographic scope of this project could potentially expand to the rest of Monroe County or even to other Crime Analysis Centers around New York State and throughout the country. If a similar database is adopted elsewhere, this would provide an opportunity to share and compare findings between municipalities and agencies across the globe. Expanding further from shootings, the database could serve as an example for future endeavors in creating similar structures for property crimes and other crimes. Even until then, the data set produced from the Rochester Shooting Database will fuel a near-infinite number of research questions, academic papers, and analyses. The first written product to emerge from the data is a brief descriptive analysis of the main areas of interest for the Smart Policing Initiative under the U.S. Department of Justice. The descriptive overview will serve as the stepping stone toward years of more research and analysis, policy implications, data supplementation and project expansion.

Chapter 4

Toward a Research Agenda for the Rochester Shooting Database

The aim of this chapter is to discuss how the Rochester Shooting Database (RSD) can be utilized to expand knowledge on shootings and guide violence intervention programs. Gun violence is a serious problem in the United States. Every year thousands of Americans are shot or killed as a result of gun violence. The majority of shootings occur in urban areas, and a significant amount of urban shootings occur in socially disadvantaged neighborhoods where African Americans and Latinos are disproportionately involved as both offenders and victims. An impressive body of literature exists on this topic. This research has established the important role that neighborhood characteristics play in shaping the processes that lead to lethal victimization (Wilkinson, 2003), the contexts in which violent victimization occurs (Stewart and Simons, 2006), as well as the nature of violent victimization in socially disadvantaged areas (Kubrin, 2003). Despite these advances, however, important questions remain.

One barrier to expanding knowledge on gun violence in America is the lack of sufficient crime data to critically assess important empirical questions. Much of the existing research examining violent crime has utilized self-report or victimization survey data. These data often produce samples that have too few shooting victims to allow for the separate consideration of shootings, and are unable to provide characteristics of shooting offenders, victims, or situations. Another area of research on shootings attempts to identify patterns of shootings across space and time. This research has been critical in identifying shooting hotspots and linkages between hotspots overtime (see Braga, Papachristos, and Hureau, 2010), but these analyses often fail to consider possible linkages between hotspots and characteristics of individuals or situations. The failure to adequately address these issues is not just a concern for theoretical criminologists. To the extent that public policy should be guided by sound theory, our failure to understand the nature of these problems may limit our ability to craft adequate solutions to reduce them.

In an attempt to address some of the shortcomings associated with shooting data, the Center for Public Safety Initiatives (CPSI) has partnered with the Rochester Police Department (RPD) and the Monroe Crime Analysis Center (MCAC) to develop the RSD. This essay will discuss how the RSD can be utilized to expand what we know about shootings and guide criminal justice violence interventions. This chapter is divided into three sections. Section One provides a brief introduction to the RSD. Section Two identifies the key research areas that can be examined with the newly developed dataset. Section Three discusses the policy implications of the research.

Brief Overview of RSD

The RSD is a collaborative project between CPSI, RPD, and MCAC. Currently in the developmental stage, the RSD will house data on all shootings that have occurred in the City of Rochester since 2001. For each shooting incident that involved a death or an injury, data will be collected on the location of the shooting, the circumstances preceding the shooting, the characteristics of the victim and the offender, the criminal justice response, and whether or not the victim was killed as a result of the shooting. It is anticipated that data collection will begin sometime during January 2013. Data collection will proceed in two steps. First, data will immediately commence for all shootings that occur after January 1, 2013. Second, data will be collected in reverse chronological order for all shootings that have occurred in the city of Rochester since 2001. Thus data will be collected for shootings that occurred in 2012, then 2011, etc.

Key Research Questions

Development of the RSD has the potential to greatly enhance what we know about inner-city gun violence. Eleven areas of research will be highlighted here:

1. Individual risk factors and shooting victimization
2. Situational factors that lead to shootings
3. Micro-place characteristics and shootings

4. Neighborhood disadvantage/code of the street and shootings
5. Race/Ethnicity and shootings
6. Gang areas and shooting
7. Drug areas and shootings
8. Categorization of shootings
9. Method of shootings
10. Firearm type and shooting outcome
11. Data collection validation

Upon examination of this research, the discussion will turn to how the research findings can be utilized to develop evidence-based violence prevention strategies in the City of Rochester.

Individual Risk Factors and Shooting Victimization

The first area of interest examines the link between individual characteristics and shooting victimization. In essence, this research asks if there are certain individual characteristics that predispose particular individuals to be at greater risk of being the victim of shooting. This research is primarily guided by lifestyle/opportunity theory. Several variants of opportunity theory exist, but each has considerable overlap (Cohen and Felson, 1979; Garafolo, 1987; Hindelang, Gottfredson, and Garafolo, 1978).

The basic premise of opportunity theory is that in order for crime to occur potential victims and motivated offenders must converge in space and time. Therefore, individuals whose recurrent and prevalent activities place them in closer proximity to motivated offenders are expected to have a high risk of victimization. According to opportunity theory, lifestyles are shaped by “individuals’ collective responses or adaptations to various role expectations and structural constraints (Meier and Meithe, 1993:466).” Role expectations and cultural restraints express shared societal expectations about appropriate behavior for individuals with certain attributes. Adherence to societal expectations leads to the establishment of routine daily activities for these individuals, thereby influencing their risk for

victimization. For example, a young male who is known to affiliate with gang members will be at a heightened risk for shooting victimization because he will likely engage in some form of criminal activity, be placed in closer proximity to violent gang members and their rivals, and join congregations of unsupervised youth in high crime areas.

Situational Characteristics

Situational research is distinct from individual-level research because it focuses on the ongoing interactions within events rather than the characteristics of the individual. As noted by Short (1995: 42), this research asks “How did this event occur, and what was the nature of the interaction among event participants that led to the behavioral outcome of interest?” Focusing on the situation rather than the individual is important because evidence suggests that situational factors may influence violence separate from individual characteristics. Understanding the sequence of such events sheds light on the factors that place both the victim and the offender at greater risk of being engaged in a shooting. For example, research has documented the role of status threats as key sources of urban violence (Short, 1995; Stewart, Schreck, and Simons, 2006). It is possible that certain status threats are more likely to lead to violent retaliation than others. It also seems plausible that particular offenders respond to status threats differently than others. Short (1995) notes that gang leaders will often use violent responses to external status threats to solidify their status within the crew or gang. Identifying the processes that lead to violent situations can aid in the development of policy interventions that seek to reduce the likelihood of violent or lethal outcomes.

Micro-Place Characteristics and Shootings

An emerging body of research has begun to examine the concentration of crime at small-geographic locations or hotspots (Weisburd, Groff, and Yang, 2011). Often the size of a city block or intersection, these areas are commonly referred to as hotspots or micro-places, and have been found to exhibit important impacts on city levels of crime. There are several findings from research on micro-places that are important for the RSD (See Weisburd, Groff, and Yang, 2011). First, this research has

found that a small proportion of street segments in a city—sometimes as small and 3.5 to 5%—account for the more than 50% of all crime (Braga, Papachristos, and Hureau, 2010). Second, hot spots exhibit variability within and across neighborhoods. Even in high crime neighborhoods crime is not evenly distributed. Although a greater number of hotspots may exist in high crime neighborhoods, these hotspots only make up a small proportion of street segments in these neighborhoods and are often adjacent to street segments with relatively low levels of crime. Third, hot spots appear to be relatively stable across space and time. Fourth, crime at place is predictable. That is, there are characteristics of micro-places that provide insight into whether or not they will become a hotspot (Weisburd, Groff, and Yang, 2011; Bernasco and Block, 2011)

The findings from research on micro-places lead to some tantalizing questions about the nature of gun violence in Rochester. First, do the spatial dynamics relating to the concentration of shooting hotspots also hold in Rochester; a city with considerably higher levels of concentrated poverty than some of the other study cities (i.e. Boston, Seattle)? Relatedly, how do neighborhood characteristics shape the emergence of crime hotspots? Third, can police lever pulling and other crime reduction strategies focused at micro-places reduce levels of violence? Fourth, do individual risk factors interact with characteristics of micro-places to influence gun victimization? If so, can crime be further reduced by suppressing crime at micro-places and closely monitoring those individuals who are most likely to be victimized at these locations? Addressing these questions will make it possible to determine the extent that targeting micro-places can be part of the solution to reducing gun violence in Rochester.

Neighborhood Characteristics

An impressive body of literature exists on the effects of neighborhood characteristics on gun violence. This research has established the important role that neighborhood characteristics play in shaping the processes that lead to lethal victimization (Wilkinson, 2003), the contexts in which violent victimization occurs (Stewart and Simons, 2006), as well as the nature of violent victimization in socially disadvantaged areas (Kubrin, 2003). Despite these advances, however, important questions remain. Two

initial questions emerge relating to gun violence and the RSD. First, how do neighborhood conditions interact with individual risk factors to influence shooting victimization? A cornucopia of research has been produced that has examined such interaction effects. Yet little is known about how such interactions might influence shootings. Because the risk factors of shooting victimization may be unique (see Wilkinson, 2003), an examination of potential interaction effects is also warranted. Second, do neighborhood level characteristics and individual level risk factors predict the likelihood that a shooting will result in death? An expansive literature exists that accounts for weapon-instrumentality effects, but less attention has been given to the other factors that might increase the lethality of violence. This is in spite of the fact that research has emerged that suggests that neighborhood conditions might increase the lethality of certain types of violence (Anderson, 1999).

Race/Ethnicity and Shootings

Understanding neighborhood effects on crime should also shed light on the link between race and violence. African Americans' disproportionate involvement in crime persists; study after study has shown that African Americans are significantly more likely to be both victims and perpetrators of violent crime. Homicide has continued to be the leading cause of death among young black males and black males are at substantially higher risk of being the victim of murder than their white counterparts (CDC; NVDRS). This disparity in black and white crime has been explained by Sampson and Wilson's (1995) racial invariance theory. This theory posits that race is an indicator for a multitude of social contexts which are variably dispersed throughout the United States, building on the argument that concentrated neighborhood disadvantage is the greatest predictor of violence. The link between race and crime, then, is viewed with regard to context rather than solely individual characteristics (also see Peterson and Krivo, 1993). More recent research challenges the racial invariance hypothesis and suggests that cultural processes moderate the impact of social disadvantage on violence (Martinez, Stowell, and Lee, 2010). Questions around neighborhood segregation, neighborhood disadvantage, inter-neighborhood disadvantage and violence, homogeneity, and cultural mechanisms could be addressed through the shooting database.

Gang Involvement

Academics have long studied the impact of gang activity on violent crime. Past research consistently shows that gang membership and gang associations greatly increase the risk of victimization by shootings (Papachristos, Braga, and Hureau, 2011; Wallace, 2009). Papachristos et al. (2011) describe the reality of gun violence concentrated within specific social networks, and that the closer an individual is socially to this network, the higher the risk for victimization. This occurrence could be partially explained by the concept of the “code of the street” (Anderson, 1999). Adherence to this code leads one to reject dependence on law enforcement to settle personal disputes and encourages the person to instead assume responsibility to settle their own disputes through violence (Ratcliffe and Rengert, 2008). This quality of street culture is then infused into the values of the street gangs, leading members to extend the responsibility of protection out to their fellow members. This creates a process by which members use violent retaliation to respond to a threat or some perceived act of disrespect (Decker and Van Winkle, 1996). This mechanism of violence can be expected to produce ongoing conflict and increased violence as opposing parties set out to “settle the score” (Ratcliffe and Rengert, 2008).

At the present time, there are several ways law enforcement can follow gang activity. The Rochester Shooting Database will provide the ability to record and examine all gang-involved shootings within the city. This will allow the opportunity to trace and link any gang-involved shootings to other incidents, or other shootings. With this information it may be possible to calculate various characteristics of gang-involved shootings, such as the average number of retaliatory shootings within a single dispute, the length of time between retaliations, and the speed and degree of escalation. Using the RSD along with existing records in crime analysis may aid in the detection of the point of initial conflict, which may guide law enforcement on where to focus their attention in order to reduce retaliatory shootings.

Drug Areas

It is axiomatic that the presence of open air drug markets in a particular area elevates levels of crime. Research has established that robbery and homicide rates are higher in cities with higher levels of crack use (Baumer, Lauritsen, Rosenfeld, and Wright, 1998). Relatedly, Blumstein (2000) argued that the national increase of crime during the mid-1980s was the result of:

introduction of crack in the mid-1980s; recruitment of young minority males to sell the drugs in street markets; arming of the drug sellers with handguns for self-protection; diffusion of guns to peers; irresponsible and excessively causal use of guns by young people, leading to a “contagious” growth in homicide and possibly robbery also. (p. 39)

An additional area of research is concerned with the link between drug markets and the spatial dynamics of violent crime. One recent study examined the relationship between gang set space—defined as the actual area within a neighborhood where gang members come together as a gang—and crime counts at open-air drug markets (Taniguchi, Ratcliffe, and Taylor; 2011). The results suggest that crime counts are high in areas used for drug distribution and even higher in drug markets occupied by more than one gang. These results suggest that competition for drug territory fuels violence. Drug areas are ripe for shootings because the money generated from the drug trade attracts attention of rival criminal groups. Because of the illegal activity involved, participants have no legal recourse to settle disputes. Research linking drugs and violence is important for understanding shootings in Rochester because evidence suggests that a substantial proportion of homicides in Rochester are drug-related (Klofas, 2001). Thus, severing the drug-violence link is important for reducing shootings in Rochester.

Categorization of Shootings

This area deals with the manner that shootings are categorized. Typically, violent crime is categorized as either expressive or instrumental. Expressive crimes represent acts of violence that occur as a result anger or frustration generated in response to an event or series of events. Instrumental crimes are those committed for explicit material gain (Meithe and Regoeczi, 2004). Although these two categorizations are widely accepted among criminologists, some have questioned the utility of this

taxonomy (Block and Block, 1993; Felson, 1993; Polk, 1994). Meither and Regoeczi (2004) examined whether expressive and instrumental crimes are fundamentally and qualitatively distinct. Although they found support for the use of this taxonomy, they also found that in the last two decades there has been an emerging context of drug and gambling related violence among inner-city youth that does not clearly fit either category.

These findings are important for understanding variation in homicide in Rochester, NY. Klofas (2001) found that homicides in Rochester largely consist of two types: Drug rip-offs or dispute related violence. Interestingly, many of these homicides don't fit neatly into the expressive-instrumental taxonomy. For instance, 6 of the 17 dispute related homicides that occurred in Rochester in 2000 were the result of long-running disputes. 2 of the 17 dispute related homicides were the result of a past rip-off or a past debt. Disputes such as these likely are motivated by both instrumental and expressive factors. 13 of the 18 rip-off homicides were the result of drug house robberies/assassinations. Although these homicides may seem instrumental on the surface, research has shown that the both instrumental and expressive motives influence drug homicides. It is possible that the persistent level of homicide in certain areas of Rochester is the result of disputes that don't clearly fit into the instrumental/expressive dichotomy. Understanding the motives of these homicides may take us a step closer to finding solutions to prevent them.

Method of Shooting

As previously noted, research has shown that the majority of shootings take place in a small number of locations (Braga, Papachristos, & Hureau, 2010). What is less known is what types of shootings are more likely to be attracted to certain places. For instance, are the majority of indoor shootings related to domestic disputes? Are most street corner shootings drug related? Can drive by shootings usually be linked to gang violence? Does the range from the shooter to the victim indicate any pattern? What can the circumstances surrounding shootings tell us about why they occur? Categorizing shootings in this manner may assist the development of effective police practices to address

gun violence. But what can specific methods reveal about the nature of these shootings? The RSD will enable law enforcement to determine any connections between method of shootings and reasons for why they occur. This will enable police interventions to effectively target the identified problems. Without information adequate information, police strategies targeting shootings will likely be too broad to be efficient. The data gathered from the RSD will allow law enforcement to identify specific issues that tend to lead to gun violence. Existing literature linking methods of shootings to causes and locations is scarce. Information gathered from the RSD will give law enforcement the opportunity to analyze shootings in a way that has not been examined in other research.

Firearm Type and Shooting Outcome

Certain types of firearms have made for a particularly hot topic in recent discussion. As increased attention is brought to several shootings involving semi-automatic firearms, the focus on other types of guns experiences an almost inverse reaction. Federal statistics show that around 70% of firearm homicides in the U.S. involve handguns, while rifles generally account for about 4% (UCR, 2012). This raises concern over the actual versus perceived magnitude and frequency of different types of firearms involved in firearm homicides. Research has consistently found that handguns account for a much larger percentage of homicide shootings than do shotguns and rifles (Cukier, 1998). In terms of nonfatal shooting injuries, firearm type is not as commonly studied, yet existing literature points to a consistency in the predominant use of handguns (Firearm & Injury Center at Penn, 2011). Studying the frequency of firearm types in both fatal and nonfatal firearm use can lead toward the fact-based formation of policy and gun regulation. Upon gathering this information and analyzing the data, it may be found that different types of firearms are used in different types of crimes, disputes, or relationships. Furthermore, it may be useful to use the information gathered from the database to track the pattern of firearm types being used across time, which can then lead to increased attention to weapons of interest.

The study of specifics on firearms is found to be even less common than the research on gun type. Specifics such as caliber, firing action, and capacity are very rarely studied, if even documented. Wright

and Rossi conducted a study in the 1980's finding that offenders tend to prefer semi-automatic and larger caliber handguns, and Koper (2007) notes that crime gun preferences may be influenced in part by manufacturing and sales market trends. In either case, marking and tracking the characteristics of weaponry used in shooting crimes could be very beneficial for focused prevention, investigation, and appropriate reaction to firearm violence. In relation to both of these concerns, the Rochester Shooting Database will serve to document known characteristics of firearms used in shootings to support focused prevention efforts. This information will lead to further research opportunities such as the relationship between weapon type and level of injury, weapon trends across time, and the correlation of dispute type and type of firearm used.

Data Collection Validation

Use of technological tools for police problem-solving has increased in recent years (Watkins, Mazerolle, Rogan, Frank, 2002) and the database has the opportunity to add to this growing field. Gunshot location technology (e.g. Shotspotter), closed circuit television, police identification, 911 calls, and hospital reporting are all methods for crime reporting. The shooting database will allow for validation of data sources on shooting incidents and inform future database development as technology expands. Comparisons can be made across the varying methods of incident detection. Questions to be addressed include: how frequently does Shotspotter detect the shootings inputted into the database? What proportion of shooting incidents is identified through technology? How frequently do various methods of reporting the same incident occur? Is one method of detection more reliable than others? Are there differences in the details that are learned dependent on the method of detection?

Criminal Justice Responses to Shootings

The research agenda discussed above sheds light on sound policy interventions that might emerge from evaluation of the RSD. Such evaluation can lead to evidence-based practices that may reduce levels of violence in the City of Rochester and are extensible to other locations. The objective of this section is to

briefly spell out some of these policy implications. The first policy implication concerns the link between individual-risk factors and gun victimization. Interventions of this nature are difficult, because many of the victims of shootings are themselves actively engaged in a lifestyle that puts them directly at risk of victimization. This fact notwithstanding, one possible solution would be to target individuals who are identified as having a high risk of gun victimization for interventions that seek to deter behaviors that are conducive to victimization and that channel them to more conventional activities. Such an intervention could take multiple forms. One option would involve the use of lever pulling to directly communicate the consequences of violence for violent actors (i.e. Community Initiative to Reduce Violence). Another option would involve the use of social interrupters to closely monitor the events of high-risk individuals in attempt to channel their energies to more conventional activities (i.e. Operation Cease-Fire).

A second policy intervention that emerges from the discussion above involves identifying those situations that are most likely to lead to violent or lethal outcomes, and developing interventions to change the course of these events. For instance, Klofas (2001) has noted that many homicides in the City of Rochester involve dispute related violence. One policy intervention would involve the collection of street intelligence to head off serious violent altercations before they take place. For example, police may receive intelligence that two gang members attacked and badly injured a rival gang member at a local night club. This information can be used to closely monitor these rival gang members and use lever pulling and other techniques to prevent the likelihood of retaliatory violence.

This process can be further aided by more precise identification of those categories of shootings that are most likely to lead to retaliatory violence. It is plausible that certain categories of shootings are more likely to lead to retaliatory violence and that certain shooting victims are more likely to respond with retaliatory violence than others. When considering that the majority of shootings in the City of Rochester are drug or dispute related, and that shooting victims are reluctant to cooperate with police due to concerns about losing street credibility or fear of having their own criminal exploits revealed, the only recourse that these victims may feel that they have is to respond to violence with further violence. Thus,

better categorization of shootings represents one aspect of identifying those events that are likely to lead to further gun violence in the city.

The third policy intervention concerns the identification of those micro-places where crime is most concentrated and development of interventions to suppress crime at these places. As noted above, Weisburd, Groff, and Yang (2011) found substantial variability in crime across street segments and established that even high-crime neighborhoods have low-crime street segments. This suggests that focusing attention on a few shooting hotspots in high crime neighborhoods may be more efficient than focusing on neighborhoods as a whole. Importantly, there is evidence that reducing shootings at hotspots can occur without dispersing crime to adjacent street segments (Wyant et al., 2012). Such an approach will allow targeted law enforcement and social service provision to certain areas while also freeing up law enforcement resources for other pressing issues. Additionally, targeting high-crime street segments rather than neighborhoods can reduce friction between police and those who contend that police indiscriminately target residents of poor minority neighborhoods.

The crime reducing benefits of targeting high-crime street segments may be enhanced further by closely monitoring high-risk individuals who congregate at high-crime street segments. As noted by Anderson (1999), certain street corners in high-crime neighborhoods become staging areas where individuals campaign for respect. These staging areas often become flashpoints for violence, as individuals use threats or assaults to enhance their street status. The important point to emphasize here is that for certain street-oriented individuals, shooting someone to settle a dispute may not be sufficient. The use of violence to settle a dispute may only result in the desired outcome if it occurs at, or in close proximity to, a staging area. Thus, combining police suppression with lever pulling may lead to an added reduction of violence, as the potential shooter is deterred and the staging area is no longer a viable location to commit the shooting.

A final intervention concerns the role of drug markets in shaping crime at hot-spots. For the purposes of this discussion, drug markets are problematic because of their violence enhancing features. As noted above, the money generated from drug markets leads to violent competition between rival

groups. Thus, both supply and demand side interventions that target drug dealing at open air drug markets may lead to reductions in associated violence. One approach might involve a series of strategies that deter drug users from seeking drugs at certain markets. These strategies might involve being pulled over and warned by police or a mail campaign that targets drivers that stopped and purchased drugs at these corners. When combined with police suppression, this approach might reduce both drug distribution and related violence at hot-spots.

Chapter 5

Preliminary Descriptive Analysis of the Rochester Shooting Database

The objective of this chapter is to provide a description of the assault shootings and firearm homicides that occurred in Rochester, NY from January 1st 2010 to June 14th 2013. This objective will be attained by describing the results of the initial analysis of the Rochester Shooting Database (RSD). This initial description of the data focuses on 6 issues: the number, time, and place of shootings; situation and circumstance of shootings; weapon type; suspect characteristics, victim characteristics; and criminal justice outcomes. These variables were selected based on their relevance to the goals of the Smart Policing project and data availability. The general take away from this discussion is that the majority of shooting incidents that occur in the city are dispute related and involve criminally involved young minority males as both victims and offenders. The next steps of this research are discussed in the concluding paragraph.

Number, Time, and Place of Shootings

From January 1st 2010 to June 14, 2013 there were 539 shooting incidents in the city of Rochester. Because several shooting incidents had multiple victims, there were a total of 594 shooting

victims during that period; 76 of whom were killed as a result of the incident. The total number of shooting incidents has fluctuated from year to year. There were 151, 129, and 193 shooting incidents in Rochester in 2010, 2011, and 2012, respectively. By mid-year 2013, 66 shooting incidents had occurred in the city. Although shooting incidents tend to peak during summer months, there is substantial shooting activity throughout the year. For instance, 7% of all shootings that occurred during the study period took place in the month of December. Additionally, a disproportionate number of shootings occurred during weekends: close to half (48%) of all shooting incidents occurred on Friday, Saturday, or Sunday. Although the weekends are characterized by an uptick in violence, there is also substantial shooting activity during the weekdays. When shootings do occur, they are most likely to take place at night. 63% of all shootings occurred between 7 pm and 3 am.

City shootings are concentrated by place. Five of the fourteen city zip codes—14605, 14608, 14609, 14611, and 14621—accounted for 74% of all shooting incidents. Furthermore, the 14621 zip code accounted for nearly 1/3 of all shootings (29.6%). 44.4% of all shootings occurred in the Northeast quadrant of the city, followed by Southwest quadrant (24.6%), the Northwest quadrant (22%), and the Southeast quadrant (8.1%). PSAs³ 24, 25, and 28 together accounted for just under a third (31.3%) of the shootings. 84% of these shootings took place in an outdoor setting: on the street, in a parking lot, yard, or some other outside location.

Rochester Shootings		
	2010-2012	
Zip Code	Number of Shootings	Percent of all Shootings
14604	7	1.3%
14605	57	10.6

³ Police Service Areas (PSAs) are geographic boundaries similar to police beats.

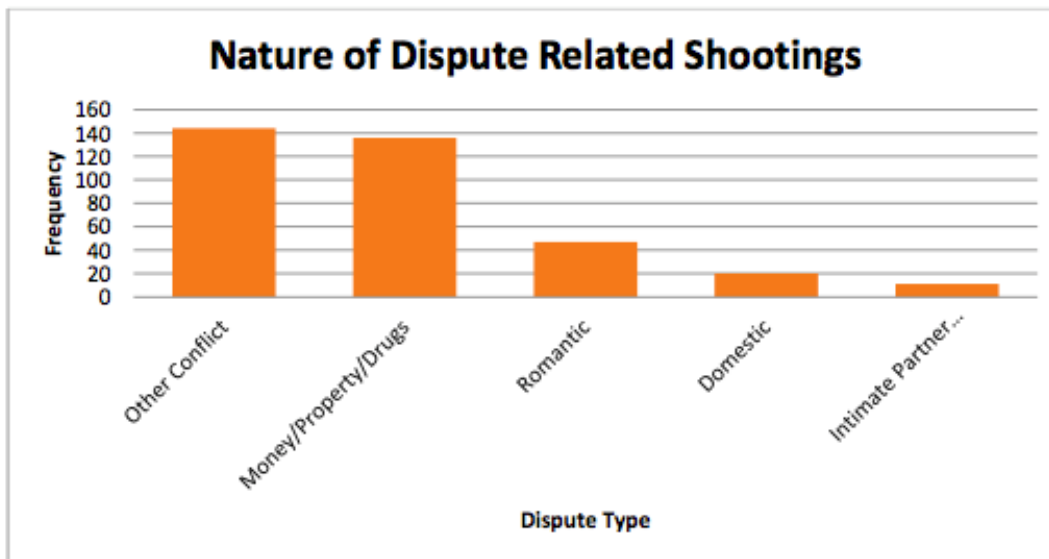
14606	39	7.2
14607	8	1.5
14608	54	10
14609	59	11
14610	1	0.2
14611	73	13.6
14613	38	7.1
14615	10	1.9
14617	2	0.4
14619	29	5.4
14620	2	0.4
14621	159	29.6
Total	538	100%

Situation and Circumstances

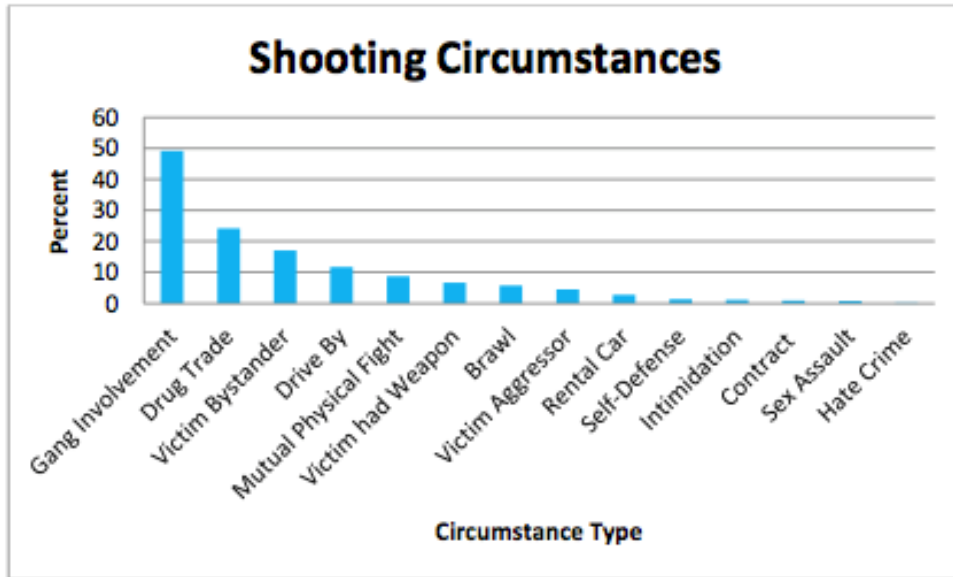
Most of the shooting incidents in the dataset had only 2 or 3 participants. 50.2% of incidents had one victim with one offender and 29.4% had a single victim with multiple offenders. Conversely, only 3.3% of shooting incidents involved both multiple victims and multiple offenders. A total of 61.9% of shootings were carried out by one offender acting alone, and the next highest percentage of 25.4 involved 2 suspects, dropping down to 10% of shootings with 3-4 offenders. Nearly 63% of the shooting incidents had at least one witness present, and a single witness was present in a total of one-third of the incidents. Additionally, information on a suspect description was provided in 76% of all cases.

In regard to the underlying causes of shootings themselves, over half (58.1%) resulted from some type of dispute. Of these, 43% involved issues over money, property, and/or drugs, 6.4% were domestic-related, and around 15% were romantic-related. Overall, 24.1% of shooting incidents exhibited characteristics relating to the illegal drug trade, and just 2% of the shootings were between intimate

partners. 49.1% of all incidents were identified as being gang-involved.



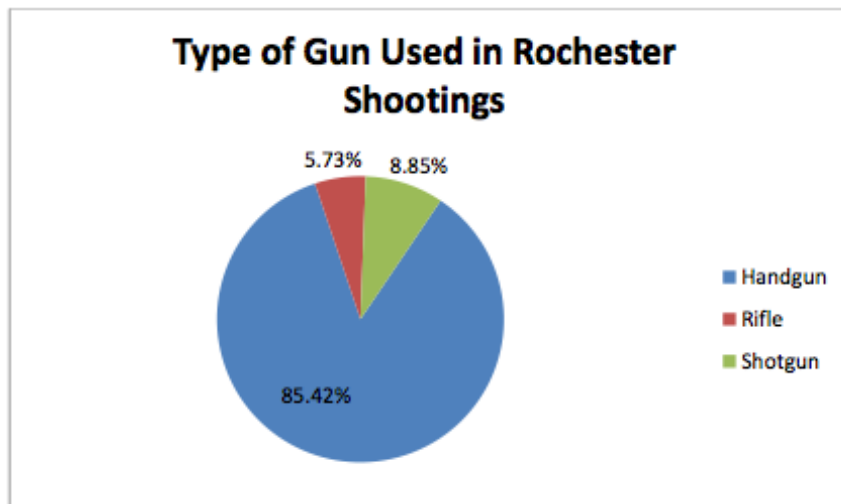
28% of shootings occurred in furtherance of another crime, with robbery being the most common at 17% overall, followed by activities relating to the drug trade at 3.5%, and burglary and gambling each at 2.2%. For the immediate circumstances of the incidents, 14.4% involved brawls or mutual physical fights, and 12% were carried out as a drive-by. Along the lines of victim behavior, 4.4% of the shootings were initiated by a victim aggressor, 6.7% involved victims in possession of a weapon at the time of the incident, and 17% of cases involved a victim who was an uninvolved bystander. Almost 9% of the time victims were determined to be under the influence of alcohol and/or drugs when they were shot. A total of 1.3% of cases were determined to result from the application of self-defense.



Weapon Use

As expected, handguns accounted for a disproportionately large proportion of shooting incidents. Among cases for which firearm data were available, 85.42% of shooting incidents involved handguns, while 8.85% involved shotguns, and 5.73% involved rifles. However, almost 30% of all weapons discharged in the incidents were of an undetermined firearm type. There was usually only one firearm present during each incident (84% of cases), and 2 firearms present around 12% of the time.

Occasionally there were 3 firearms in an incident (2.2%), but more than that was a rarity, occurring only .97% of the time. In most cases, firearms were the only weapons found to be present in the incident. 74% of incidents documented between 1 and 4 shots fired. The most common number of shots fired during an incident was 1 (29% of cases), and the overall highest number of shots documented was 18.



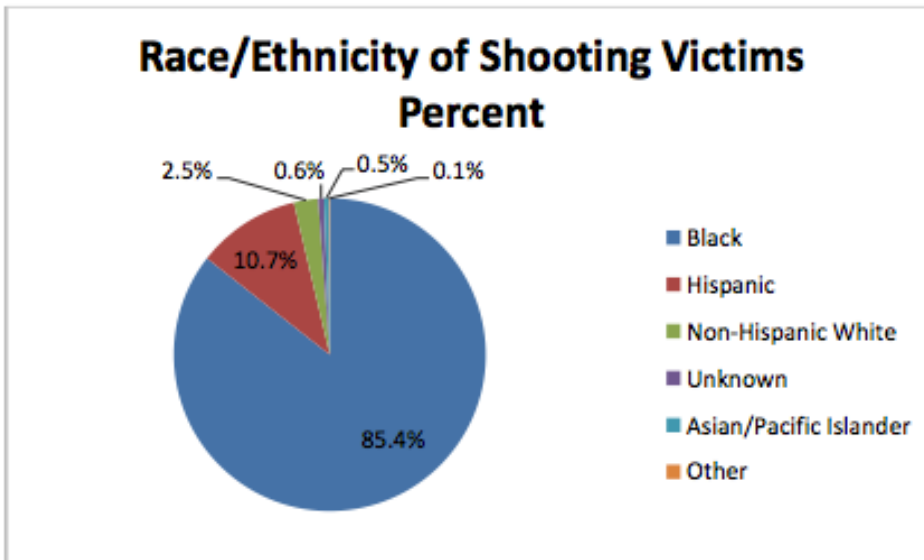
Firearms were recovered in about 11.8% of cases. Of these cases, around 55% were recovered at the scene and 45% recovered during investigation. Spent ammunition was found at the scene of 58.5% of shootings and live ammunition was recovered in 7% of the shooting incidents. The most common calibers of weapons used were .22 and 9mm, accounting for over 21% of the identified firearms.

Suspect

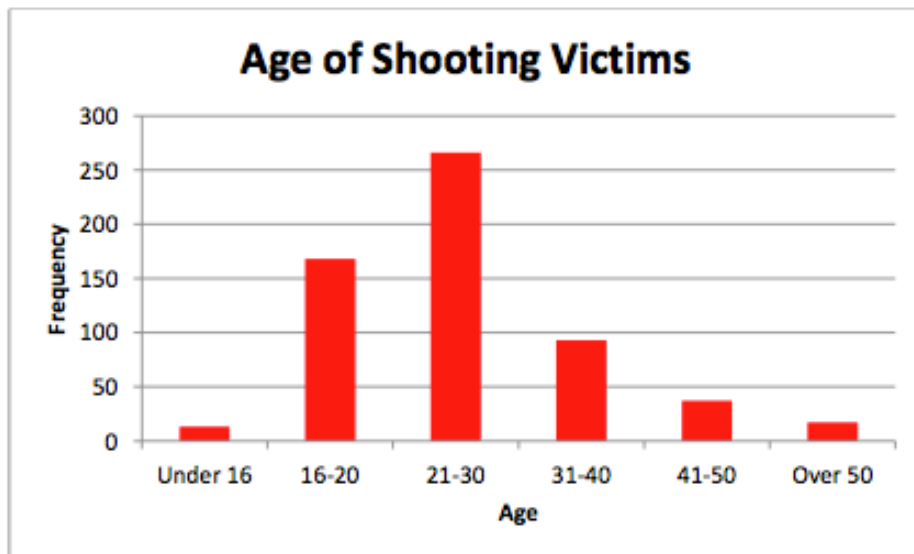
Suspect information was provided for 76% of all incidents. This suspect information is provided to RPD by witnesses and, as a result of this fact, is relatively vague. For those incidents in which suspect information was presented, black males were suspects in more than 90% of the shooting incidents. Because suspect information is limited, a detailed discussion of suspect characteristics is not possible at this time.

Victims

The majority of shooting victims in the city of Rochester are young black males who have criminal records and reside in impoverished neighborhoods in the city. African Americans made up 85% of all shooting victims in Rochester during the study period. Combined, African Americans and Hispanics made up 96% of all shooting victims.



93% of the shooting victims were male. The average age of shooting victims was 25, and the overwhelming majority of shooting victims were above the age of 16. 87.5% of all shooting victims had a previous criminal history at the time of the shooting incident. 40% of victims had been cited for possession of an illicit substance. 37% of shooting victims had been arrested for a violent crime, and 46% had been arrested for a property crime. Although most of the victims were not gang affiliated, gang affiliates did make up a considerable percentage of shooting victims (37%). Importantly, 1/3 of all shooting victims previously had been victims of violent crime and 29% had been known victims of property crime.



Criminal Justice Investigation/ Outcomes

911 calls are the primary method that police are notified about shootings. In 55% of the incidents, police officials were informed about the shootings by an unknown informant or an uninvolved witness. Of the 331 cases for which there are data, 75 (23%) of shooting incidents occurred near a city camera. Shotspotter data were available for 147 (27%) of the shootings that occurred in the city. 226 (42%) of shooting victims had been mentioned in an FIF sometime during the six months prior to the shooting incident. To date, 246 of the shooting incidents have been cleared and another 167 have been closed by investigation. 188 shooting suspects have been identified; 112 of which have been arrested. Of those arrested, the average investigation time before arrest was 35 days. A significant proportion of these arrests were made within 48 hours of the incident. This suggests that, for those cases in which investigators are able to gather sufficient information regarding the suspect, arrests are often made shortly after the incident occurs. For most shooting suspects, trial time and sentence are currently unavailable. MCAC analysts are currently attempting to access this data from the District Attorney's office. Results of this data will be analyzed and reported once data become available.

Next Steps

The next steps in the analysis will proceed in the following manner. First, means tests of dispute-related shootings and non-dispute related shootings will be performed. These tests will inform us about

how dispute-related shootings differ from non-dispute-related shootings in the categories discussed above. Second, regression analyses will be performed to identify those factors that cause dispute-related shootings. Third, factor analysis will be performed to determine if the variables that cause dispute-related shootings coalesce around a single factor.

Chapter 6

Analysis of Shootings in Rochester, NY: Descriptive Analysis of Circumstances

This chapter provides an initial analysis of the data housed within the Rochester Shooting Victims Database. This analysis will provide a synopsis of general information on assault and homicide shootings in Rochester, New York from January 2010 through December 2012. It will then go on to identify and describe the circumstances surrounding these incidents through descriptive and geospatial analysis. Subsequent chapters will examine the differences between gang-involved versus non-gang involved shootings and dispute-related versus non-dispute related shootings.

Descriptive Analysis of Shootings in Rochester

General Numbers and Temporal Breakdown

The city of Rochester, New York has seen an average of 200 shooting victims⁴ each year for the past ten years. In the three years from 2010 to 2012, there were a total of 532 shooting victims in 474 separate events. Of the shooting injuries, 71 of them were fatal. 152 shooting

⁴ Defined as any individual who has received a gunshot wound from a discharged firearm.

incidents⁵ occurred in 2010, 129 occurred in 2011, and 193 occurred in 2012. Over this three-year time span, August was the month that saw the highest number of shootings, containing 13.7% of the incidents. June was second in rank, holding 11% of all of the shootings. The day of the week that possessed the highest percentage of shootings was Sunday at 19%. This unexpected finding is due to late-night Saturday shootings that occur after midnight, and are counted in Sunday's total.

In terms of occur times of shootings, 64.6% of shootings happened between 7:00pm and 2:59am. A further breakdown of the times of occurrence is shown below in Figure 10.

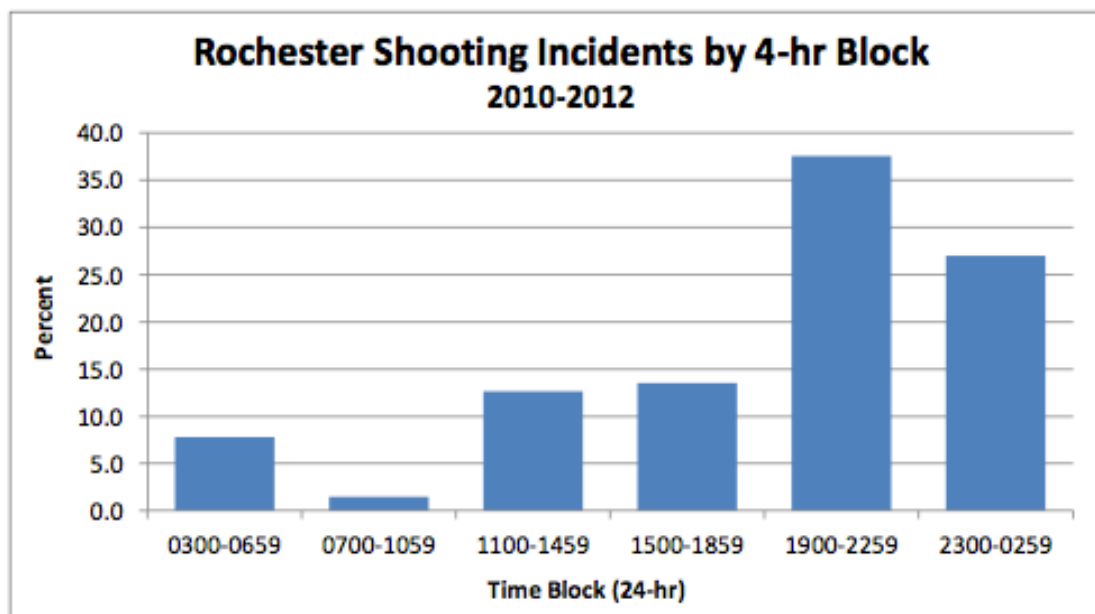


Figure 10: Percentage of occur times of Rochester shootings from 2010 to 2012 broken down by four-hour blocks

Situational Factors

⁵ For this report, shooting incident refers to an incident in which a firearm was discharged and resulted in an individual suffering a gunshot wound.

Most of the shootings from the 2010-2012 time period were between 2 people (nearly 60%). The largest documented number of people involved (victims plus suspects) was 8. Exactly half of the shootings contained a single victim and single offender⁶. The one case that had a single victim and no offender was a shooting that was immediately identified as self-inflicted⁷. Figure 11 shows the frequency distribution of opposing sides in the shooting incidents.

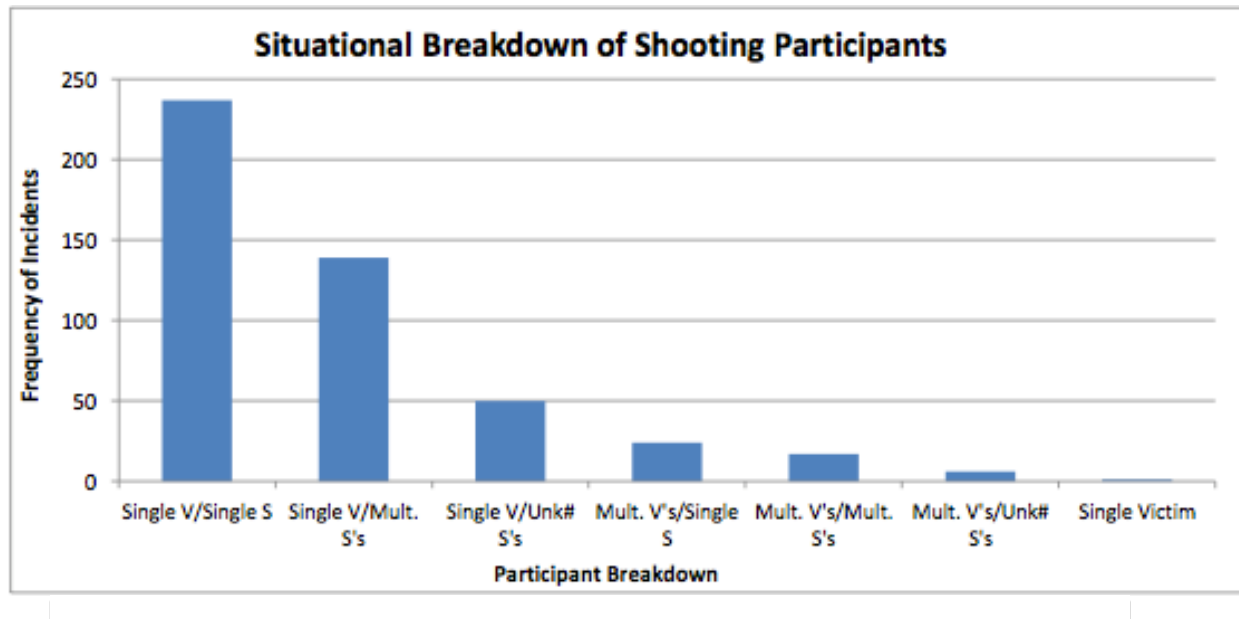


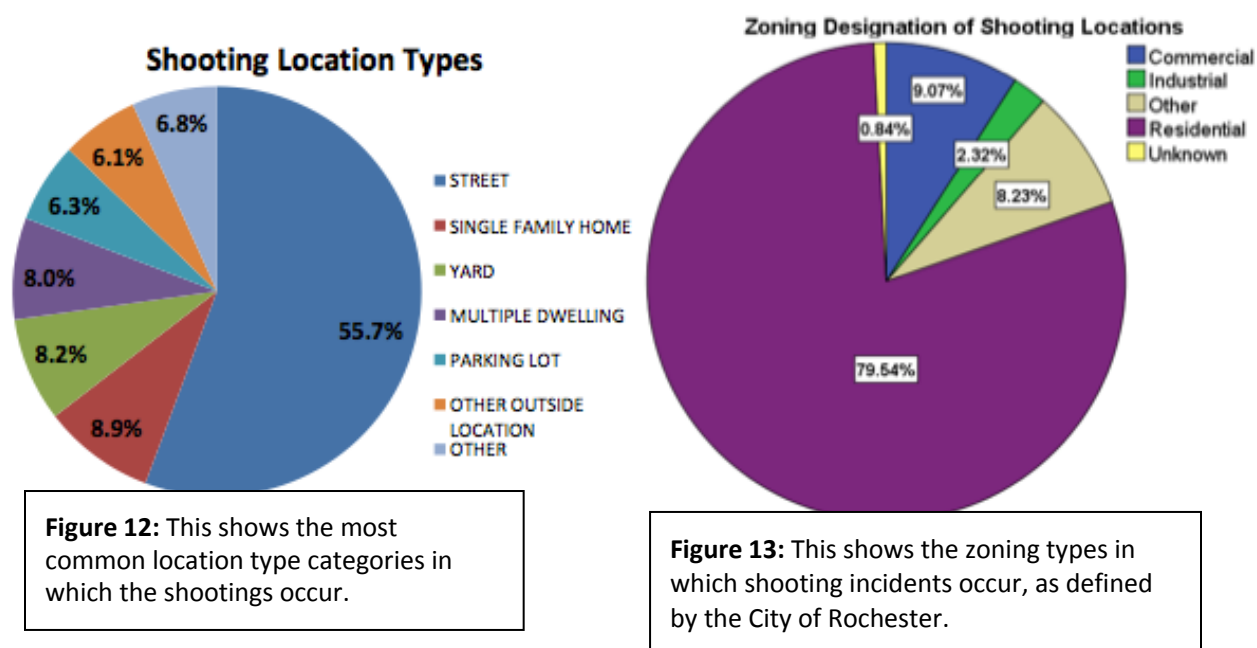
Figure 11: Situational breakdown of the number of victims and the number of offenders involved in the shooting incidents

Of the shooting incidents studied there was more often than not a witness present as 69% of incidents had at least one witness. Additionally, 85% of all shootings occurred outdoors

⁶ The frequencies of the number of people involved and the percentage of single victim/single offender do not match up because if the number of offenders was unknown, coders would select the “__ Victim/Unknown #Offenders” option and code a “2” for the number of persons involved so as to account for the minimum number that it could possibly be.

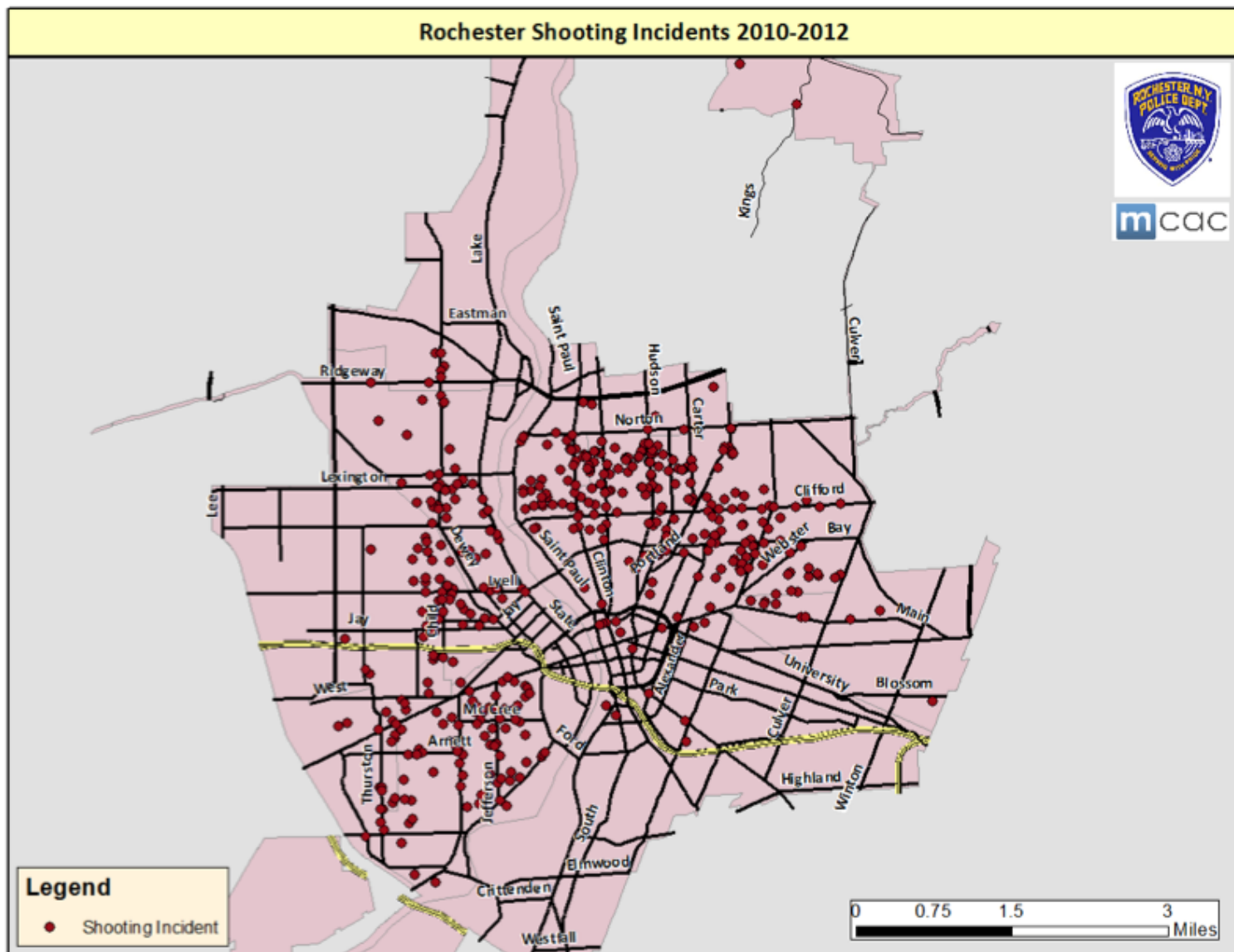
⁷ The rest of the self-inflicted shootings either had another victim in the incident or were originally reported as an assault shooting that had a victim and an unknown suspect. These were then changed to indicate “self-inflicted” but the participant breakdown remained unchanged since it was given as the original story and to avoid having the coders decide which account of events is correct.

(13.5% were indoors; 1.5% were undetermined). The most common place for a shooting to occur was on the street, as almost 56% of all shootings happened there. This was followed in prevalence by single-family homes, yards, and multiple dwellings at 8.9%, 8.2%, and 8%, respectively. The pie chart in Figure 12 provides a visual breakdown of the data. Zoning designations were also examined for these shooting locations. Overall, nearly 80% of all shootings occurred in residential areas, which seems logical, as these areas are commonly where people spend most of their time and interact. Figure 13 displays this and the remaining percentages of zoning types.



Another notable characteristic of these shootings is that 80.4% occurred on an occupied property and 5.3% occurred on a vacant one (the remaining 14.3% were undetermined). In addition, 13% of shootings occurred at the victim's own residence, and 1.5% (7 cases out of 474) occurred at a victim's legitimate workplace or while they were on the job. The following section will present and discuss some geospatial data on these shooting incidents.

Geography of Shootings in Rochester



Map of Shootings in Rochester

Figure 14: Map of all shooting incidents in the City of Rochester from 2010 - 2012.

Figure 14 maps out all of the shooting incidents in our study between 2010 and 2012. This map provides the general basis on which to view and analyze shooting incidents in a geospatial sense. Major streets and roadways are provided and labeled for reference.

Visually, we can see that shooting incidents in Rochester are nowhere near uniformly distributed throughout the city. There is a distinct pattern that emerges that roughly takes the shape of a crescent, arching from the northeast section of the city, to the northwest and into the southwest. This “crescent shape” is similarly found to emerge in other studies on various types of crime in Rochester (Ghosh, Langenbacher, Duda, & Klofas, 2012; Klofas, 2001). This general high- crime area has remained consistent for well over a decade. However, we can see that other patterns begin to emerge outside of this shape. There is an area in the Northwest around the intersection of Dewey and Ridgeway where a cluster of incidents appears outside of this “crescent” shape. Furthermore, the incidents in the Southwest appear to be more spread out than the rest of the shape in the Northwest and Northeast, where incidents appear to be more tightly clustered. Because of this variation, it is going to be more beneficial for research and policy purposes to investigate variance and patterns on a smaller geographical level.

Shooting Rates by Census Tract

Traditionally, census tracts are used as rough approximations of neighborhoods, but in many cases these do not line up with actual perceived neighborhood boundaries. The benefit of using census tracts is to have a known population size within each tract. This allows us to calculate an incident rate in each for the purpose of comparison. A map of the rates of shooting

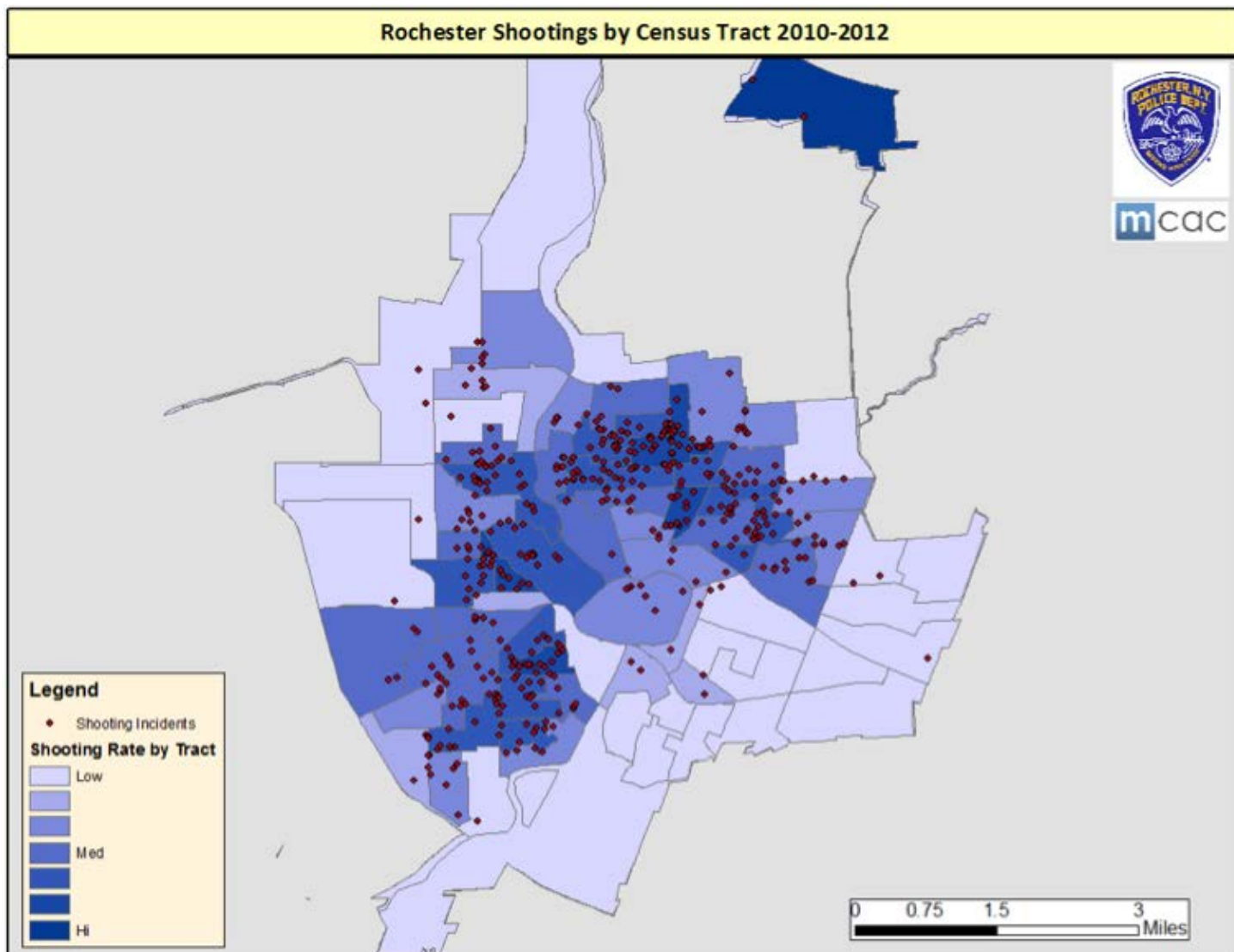


Figure 15: Rates of shooting incident in Rochester from 2010-2012 by census tract.

incidents by census tract in Rochester is shown in Figure 15. Each graduated color was relatively determined through rate calculations in a geographic information system (GIS) software. The total count of incidents in a tract was normalized by the population within that tract. The “Low” value of the lightest color contains shooting incident rates between 0 and 0.6 per 1,000 people. The “Med” value refers to rates of 2.5 through 4 per 1,000, and the “Hi” value in the darkest color contains rates of 11.5 to 83.3 per 1,000 people. The tracts with the highest rate of shootings

had rates between 9.5 and 11.5 per 1,000⁸. These tracts are indicated in red in Figure 16. By contrast, the rate for the entire City of Rochester was 2.25 per 1,000 for those same years.

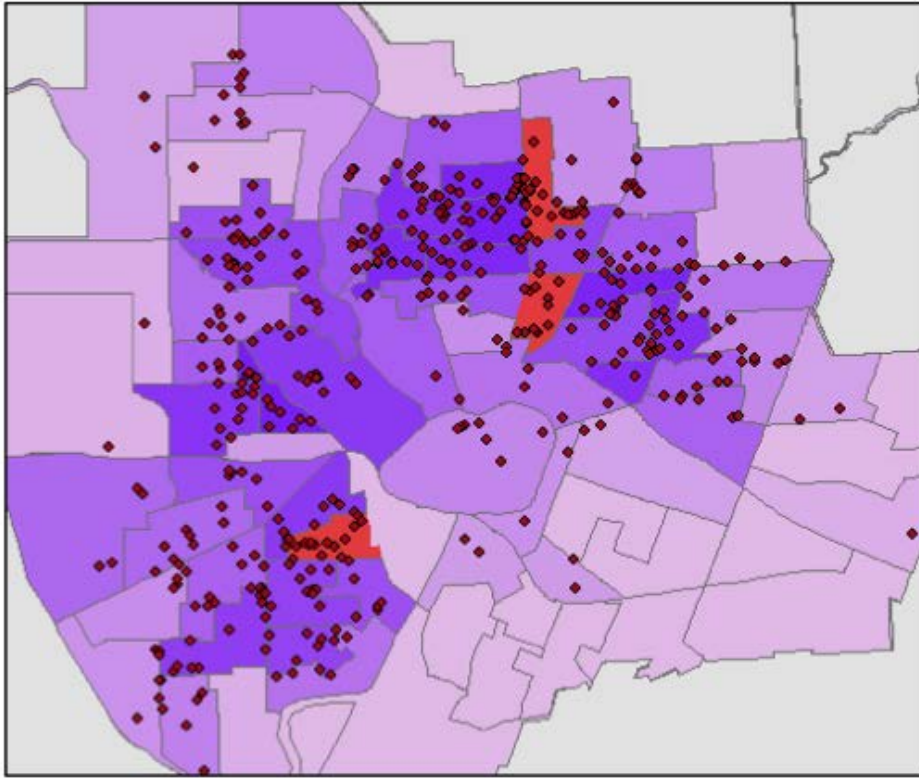


Figure 16: Cutout of a map of Rochester with the three census tracts with the highest rates of shootings indicated in red.

Shooting Rates with Neighborhood Boundaries

To provide perspective to the casual onlooker and to give a point of reference, census tracts are overlaid with neighborhood boundaries in Figure 17⁹. A shapefile of identified Rochester neighborhood boundaries was obtained from the City of Rochester's Department of Neighborhood and Business Development. Due to the smallest geographic unit from the census

⁸ The darkest tract in the far north is Durand Eastman Park. This tract has an inherently small population that is reported which dramatically skews the rate results. For this reason, this tract is not included in the ranking.

⁹ The northernmost stretch of the city is cropped out of Figures 17 and 18 since only two incidents occurred there in the three-year period at Durand Eastman Park, and I wanted to focus on the core of the incidents.

being block groups, it is impossible to attribute accurate demographic data to the neighborhood level.

Though the intention of census tracts is to capture neighborhood areas, these areas in reality can and do span across multiple locally identified neighborhoods. The map in Figure 17 allows viewers to see where variance in shooting rates occurs even within the same neighborhood. As stated above, the rates shown in this map are per 1,000 people. Rates were highest in census tracts falling in these neighborhoods: 14621 in the northeast, Mayor's Heights in the upper southwest, Jay Orchard Street Area Neighborhood Association (JOSANA) and a small portion of Lyell-Otis in the mid-west, and a section between Coalition of Northeast Association (CONEA) and the upper part of South Marketview Heights in the lower northeast. This may have no true statistical meaning, but seeing these rates with the perspective of known neighborhoods can be much more relatable for the average person.

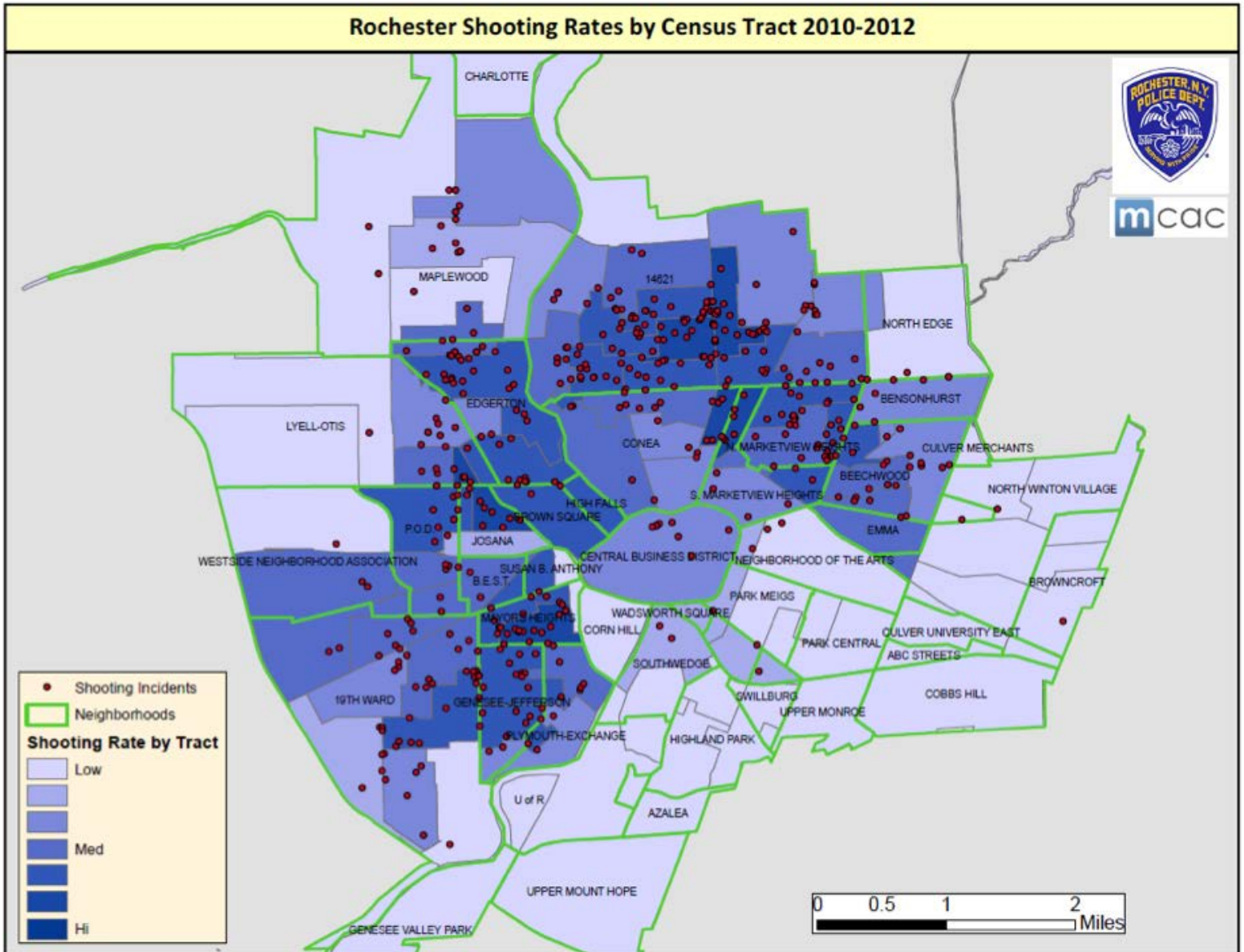


Figure 17: 2010-2012 shooting rates by census tract overlaid with Rochester neighborhood boundaries.

Fatal and Nonfatal Shootings

The following map in Figure 18 displays the area in Rochester with the majority of the shooting incidents. The only two incidents not depicted in this map fall in the far north by Lake Ontario in Durand Eastman Park, which were both nonfatal. This central view of the city is

broken up by the identified Rochester neighborhoods. The colors of the dots differentiate between fatal incidents and nonfatal incidents. Incidents that resulted in at least one shooting fatality are represented in red, while incidents that had only nonfatal shootings and no deaths are represented in blue. With this map, we can visualize not only the distribution of incidents, but also the distribution of the fatality of shootings across different neighborhoods in Rochester. Fatality rates can be calculated by calculating the proportion of fatal incidents for each of the census tracts. The proportions can then be used to create rates based on population for each tract in the city. Though this analysis is not going to be done for this paper, it may be conducted at a future time.

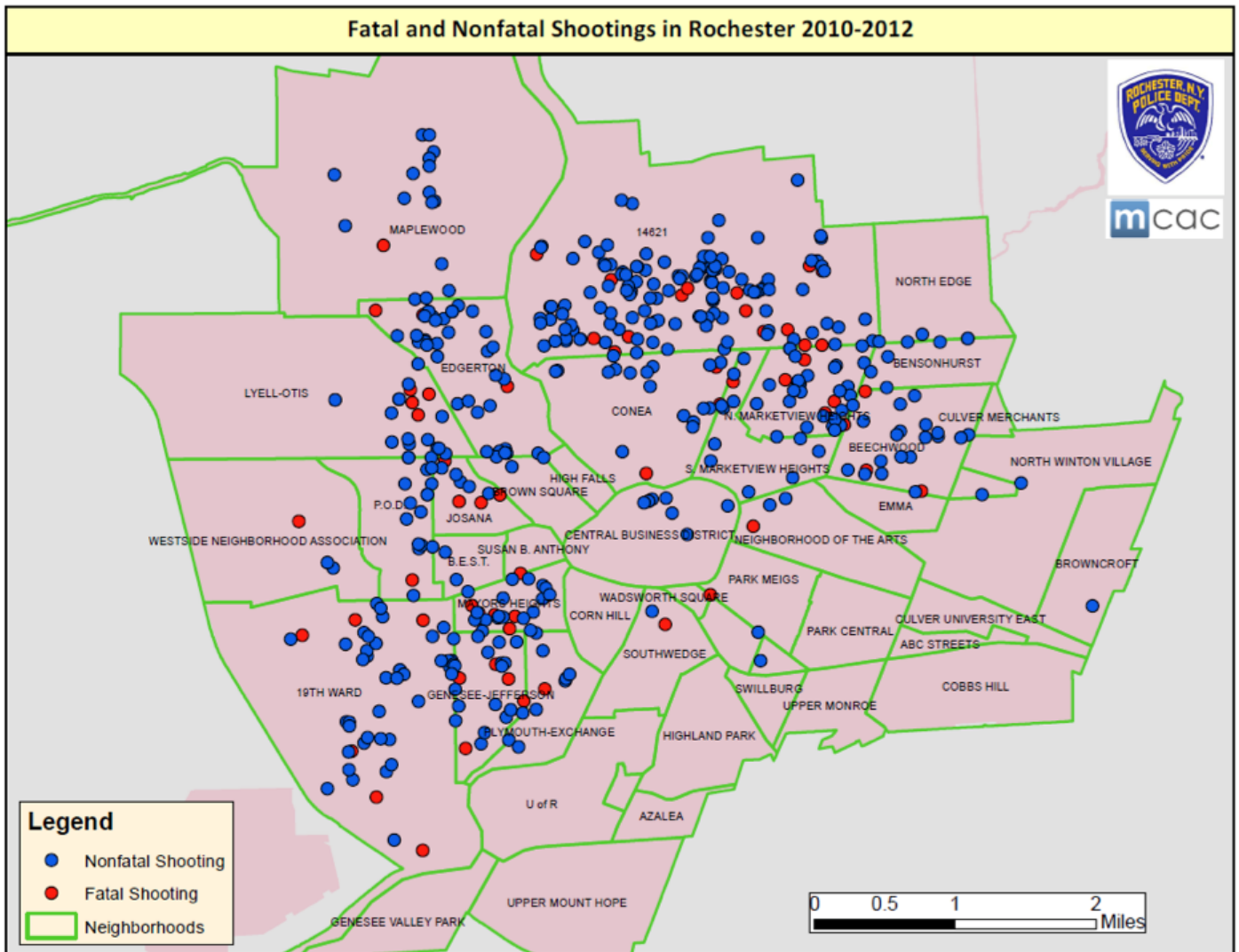


Figure 18: Map of fatal and nonfatal shooting incidents in Rochester neighborhoods.

Continued Analysis

The next phase of analysis will be to examine statistical differences between several aspects of shootings. We will look at first the nature and differences of gang-related versus non-gang related shootings and discuss the factors that may contribute to an incident being gang-involved. The same will be done to distinguish dispute and non-dispute related shooting incidents. The final chapter in this series will serve to summarize and connect the important

points discussed in the succession of chapters through this entire project. We will attempt to identify the qualities that represent the most promising areas of influence for intervention. The intention of these analyses is to gain a better understanding of shootings in Rochester in hopes of informing departmental policies on where to dedicate which types of resources to best to handle and prevent these incidents.

Chapter 7

Firearm Injuries in Children

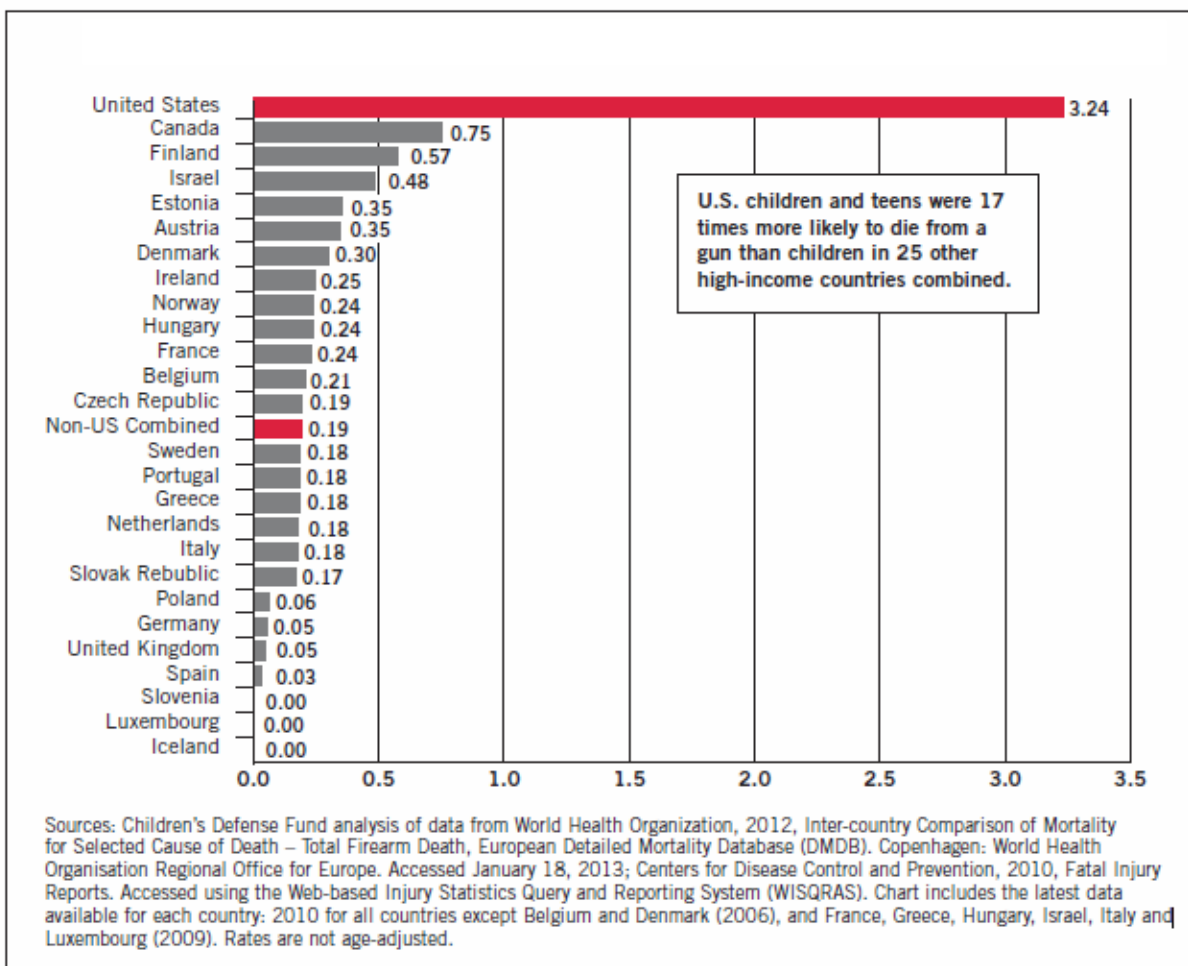
In order to understand the nature and magnitude of the problem of firearm injury in children, one must consider all circumstances under which firearm injuries occur, regardless of relationship of the victim to the perpetrator or intent to injure. As such, this article will consider accidental and intentional self-inflicted injury as well as injuries resulting from criminal activity. While each circumstance will invite unique approaches for prevention, the accessibility of firearms in the United States contributes to the extremely high rate of injury in the United States as compared to other prosperous countries. Whereas other countries may have similar rates of violence, the rates of serious injury and death are much higher in the United States because firearms are often used. Firearms are especially effective at causing injury and death when compared to other methods that one might use to commit violence.

Magnitude of the Problem

National Statistics on the Number Injured

The magnitude of the problem of firearm injury in the US can be appreciated by examining data accessible through the Center for Disease Control's Web-based Injury Statistics Query and Reporting System (WISQARS). National estimates of nonfatal injuries are obtained from reporting to the Consumer Product Safety Commission's (CPSC) National Electronic Injury Surveillance System (NEISS). NEISS coordinators working for the hospital or under contract by the CPSC at approximately 100 representative hospitals throughout the US report every product-related injury evaluated at the hospital's emergency department. Fatal injury data are derived from reporting to the National Vital Statistics System by states and counties using ICD 10 codes since 1999.

Queries of the 2010 CDC data generated the following statistics: There were 105,197 injuries from firearms in the US; 73,505 patients were treated for nonfatal gunshot wounds, and 31,672 deaths resulted from firearm injury. Of the deaths, 19,392 (61%) were suicides, 11,078 (35%) were homicides and 606 (2%) were classified as unintentional. In children and youth under the age of 19, there were 15,576 nonfatal injuries and 2,711 deaths from firearm injury. Of the deaths in this group, 1,173 (65%) were homicides, 749 (28%) were suicides and 134 (5%) were classified as unintentional. Firearm injury is second only to motor vehicle accidents (4,442 deaths) as a cause of death in this age group. Older teens are at the greatest risk of being victims of firearm injury. Of the firearm injuries occurring in the under 19 year old group, 86 percent of firearm deaths and 89 percent of gun injuries occurred in 15-19 year-olds. In comparison to other high income countries the death rate from firearm injury in the US is very high (Figure 19).



* Data were not available for Australia, Japan, South Korea, New Zealand and Switzerland.

Figure 19: Rates of Gun Deaths per 100,000 Children and Teens in High-Income Countries. Source: Children's Defense Fund, 2013, p. 33.

Because firearm injury so frequently involves younger individuals (Figure 20), the years of potential life lost are very high.

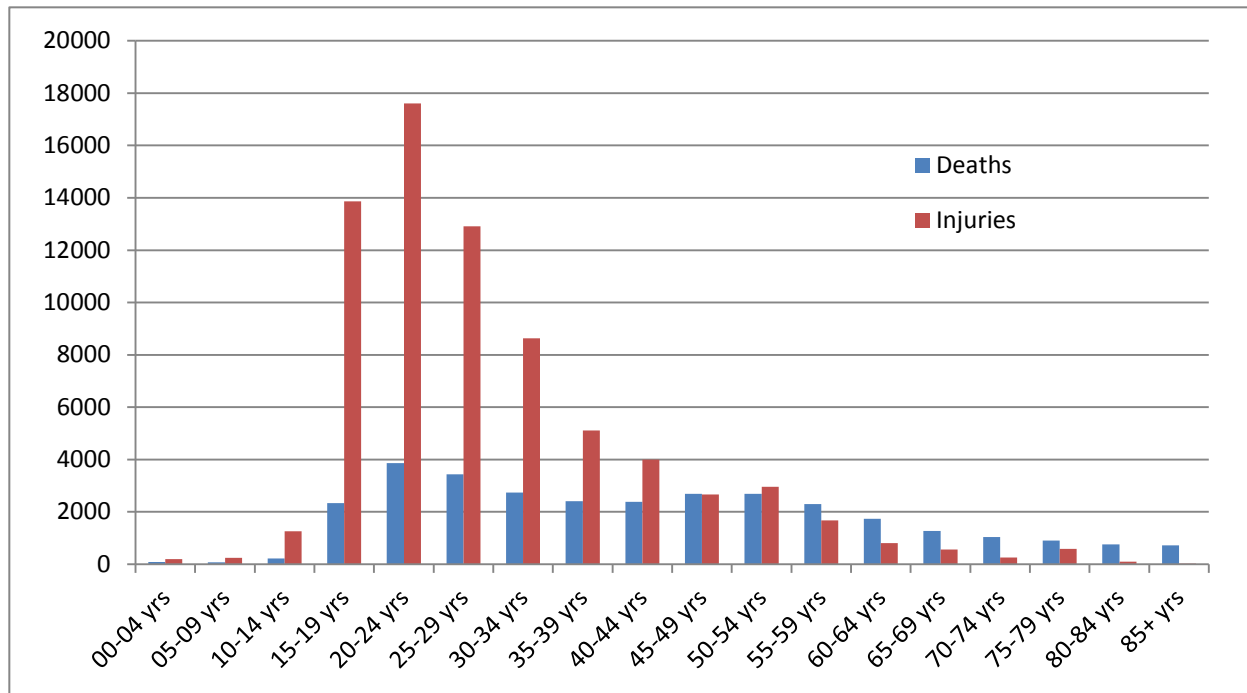


Figure 20: Numbers of fatal and nonfatal firearm injury by age group. Source: CDC (2013).

When compared to other causes of injury, firearms are the third leading cause of years of potential life lost (Figure 21).

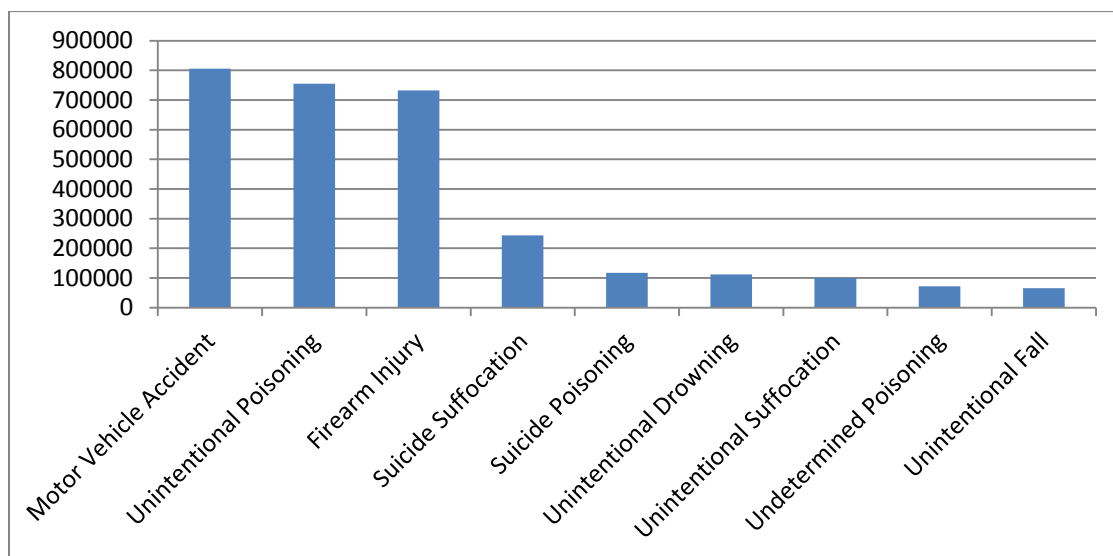


Figure 21: Years of potential life lost due to injury. Source: CDC (2013).

Another way to look at the impact of firearm injury is to look at its effect on life expectancy. As compared to other causes of death to which the US devotes a lot of resources, death from firearm injury has a substantial effect on life expectancy in the US (Table 1). Reduction in life expectancy as a result of death by firearm is higher than that for both colon and prostate cancer. The life expectancy of males in general, and black males in particular, is affected very significantly by firearm injury.

Cause of Death	Reduction in Life Expectancy (days)
• Lung Cancer	197
• Motor vehicle accidents	161
• Firearm injury	104
• Colon Cancer	67
• Prostate cancer (males)	47
Firearm injury reduction in life expectancy for:	
• White males	151
• Black males	362

Table 1: Reduction in US life expectancy, in days, by cause and by population. Adapted from *Firearm Injury in the US, 2011*

Rochester Statistics on Number Injured

There are innovative efforts underway in Rochester to gather data on firearm injury. As one of the first of its kind, firearm injury statistics for the City of Rochester are pulled from the Rochester Shooting Victims Database developed by researchers at Rochester Institute of Technology's Center for Public Safety Initiatives (CPSI) and housed at the Monroe Crime Analysis Center (MCAC). Because of the nature of the managing agency, shooting incidents are only included in this database if there was a criminal charge attributed to the shooting at any time. As it currently stands, full records of non-criminal accidental and self-inflicted injuries are not available to be included in the database. Although some self-inflicted events have made it into the MCAC database, an accurate reflection of these injuries is difficult to obtain. The importance of combining these two injury types is clear; without one it is impossible to fully understand the problem of firearm injury and develop effective interventions for preventing them.

For all criminal shootings in Rochester from 2010 through 2012, there were 532 individuals who suffered from gunshot wounds. Of these, 71 were fatal and 461 were nonfatal. Two suicides by firearm made it into the database along with two determined nonfatal self-inflicted gunshot wounds and seventeen suspected self-inflicted gunshot wounds. During this period, 90 shooting victims were children ages 18 and younger. Nine of these were fatal including one that was a suicide in connection to a murder (the murder victim was over the age of 18). Rochester shooting statistics by age and race reflect the great disparity shown in national statistics. In the three-year study period, 90% of the children who were victims of firearm injury were black. Furthermore, black males under the age of 18 were almost nineteen times more likely to become a shooting victim than their white counterparts. Though the proportion of children 18 and younger was just under 17% of shooting victims, half of the total shooting victims were 23 years old or younger.

The Cost of Firearm Injury

The Pacific Institute for Research and Evaluation produced a comprehensive estimate of the cost of firearm injury based on 2010 CDC data. They estimated the cost of gun injury to be \$174 billion, taking into account the costs of medical care, work loss, mental health care, emergency transport, police, criminal justice, claims processing, employer cost and quality of life. At \$113 billion, quality of life cost (pain, suffering, and loss of enjoyment of life of people who were shot and their families) was the largest contributor to the total. The Pacific Institute estimate did not include the cost of lost property value or property tax revenue.

We used the CDC's WISQARS to estimate the cost of gun injury in 0-19 year old children.

Based on 2005 data, medical and lost work costs alone amounted to \$5.5 billion. When criminal activity is involved, as it is in 2/3 of the cases, the economic cost is much higher because of the criminal justice, quality of life and property value costs in the area in which these crimes occur.

With tools available to us, we were not able to include these costs in our estimate.

A complete estimate cost must take into account economic and non-economic costs, including at least:

1. Healthcare costs associated with treatment of the acute injury and physical and psychological rehabilitation of the victims
2. Lost productivity of the injured individuals and the family members caring for them
3. Police costs for investigation, criminal justice costs for prosecution and incarceration costs for those found guilty of a crime
4. Cost of security in schools and other public places
5. Lost property value

6. Reduced property tax revenue making it more difficult to pay for programs and services that interrupt the cycles of poverty and violence
7. Pain and suffering of victims and their families
8. Loss of a sense of safety and security in the community
9. Employer costs related to replacing lost worker productivity, recruitment, retraining
10. Limitations on where and when to travel or be outside to the extent that in some communities it limits opportunities for play and has been proposed as a contributor to obesity

Firearm Injury as a Public Health Problem

Organized medicine has long recognized firearm injuries as a public health issue with the American Medical Association calling for a public health approach to the problem since at least 1987. This approach involves (1) defining the problem, (2) identifying risk and protective factors, (3) developing and testing strategies, and (4) assuring widespread adoption. Despite the longstanding calls for action, we are still struggling to complete step 2.

In comparison to other types of injury on which the US has made major public health efforts, those dedicated to firearm injury are relatively small. For example, prior to enactment of laws mandating bicycle helmet use, head injury caused approximately 600 deaths and 181,000 emergency department visits per year. While accounting for more injuries overall, the number of deaths due to bicycle injury at that time is 2% of the number of deaths due to firearm injury in 2010. With physicians as very important participants, our nation put into place robust public health efforts that by legislation, education and efforts directed at changing social norms resulted in a very high proportion of bicycle riders now wearing helmets. Similarly, we have made tremendous strides in reducing motor vehicle injuries. As was the case with bicycle helmets, the

success involves education, legislation and changing social norms. Many physicians continue to play an important role by routinely asking patients about seatbelt use. Partly because we lack the evidence base to support them, few efforts have been made to prevent gun injury.

In Rochester, there is a public health effort underway to prevent firearm injury in children. The ASK campaign (Asking Saves Kids), developed by the Center for Prevention of Youth Violence in collaboration with the American Academy of Pediatrics, encourages physicians and their staff to educate parents about the risk of unsecured firearms in homes that their children may be visiting and encourages parents to ask whether the homes have unsecured firearms. Posters and brochures provide parents with suggestions for non-confrontational ways to initiate conversations regarding unsecured firearms with adults in the homes their children are visiting (Figure 22).



Figure 22: A portion of the ASK campaign trifold brochure. Adapted from AskingSavesKids.org, the Center for prevention of Youth Violence, 2013.

A Call for More Research

Research into the circumstances surrounding firearm injury has been very limited since 1996 when Congress removed all funding for research on firearm injury from the National Center for Injury Prevention and Control. In the same year, Congress stipulated that "None of the funds made available for injury prevention and control at the Centers for Disease Control and Prevention may be used to advocate or promote gun control." These prohibitions were introduced two years after the *New England Journal of Medicine* published Kellerman's article demonstrating a 2.7 fold risk of homicide in homes with guns. This prohibition has effectively halted the development of the evidence base required to develop rational solutions to the problem

of firearm injury. In the wake of the Sandy Hook shootings in 2012, President Obama requested that Congress approve \$10 million for research on the causes and prevention of gun violence. These efforts might well start with improving the collection of data that describe the circumstances surrounding firearm injuries.

A September 28, 2013 *New York Times* article highlights how imprecise data reporting can hamper the study of firearm injury. The article describes a lack of standardization around whether a death is classified as an accidental death or a homicide. The *Times* found many instances where children died from accidental gunshots that were ruled as homicides. In one instance, a three year old died after accidentally shooting himself with his father's unsafely stored gun. Because the child's father was deemed negligent in the storage of the firearm, the death was classified as a homicide. The *Times* report revealed that nearly half of accidental injuries are reported as homicides rather than accidents. The proper classification of firearm injuries is critical to identifying the most effective means to prevent them.

If we hope to be able to understand the problem of gun injury and develop effective strategies to combat it, we must encourage researchers from all appropriate disciplines to perform the sound research necessary to form an evidence base on which to draw. This research should garner funding commensurate with the magnitude of the problem. There remains strong political opposition to research whose results might undermine positions in which their adherents have a stake. However, the performance of sound research and the application of its results must be embraced by all those whose goal is the health, safety, and security of our children and communities.

Chapter 8

Analysis of Shootings in Rochester, NY:

Gang versus Non-Gang Shootings

Gang-involved circumstances account for just over half (50.6%) of all shooting incidents in Rochester, NY between 2010 and 2012. This chapter will examine the differences between gang-involved shootings and non-gang involved shootings during that time period. There are many existing assumptions of gang activity and gun violence in the general public. These assumptions will be taken from theory, previous studies, and the media to be tested in the study to determine their veracity. A total of 474 shooting incidents will be analyzed in terms of descriptive frequencies and cross tabulation. The findings of these analyses will help to identify certain characteristics that differentiate gang-involved shootings from non-gang involved shootings in an effort to help inform policy. It is believed that knowing the frequency and characteristics of these types of shootings will help determine the areas and angles on which to focus preventive efforts on gun violence.

Gang Involvement in Rochester

In order to formally be considered a gang member or associate in Rochester, there are certain criteria that must be met. To be considered a full-fledged member, an individual must first have an arrest record or documented crime involvement. The individual must also be documented with at least three (3) of the following gang membership elements:

- Possessing gang graffiti (in jail, in home, etc.)
- Associating with other gang members

- Arrested with other gang members
- Parent/Guardian ID them as such
- Self-declaration
- Using gang signs
- At a gang location
- Wearing gang clothing
- Physical evidence connecting them to a gang or gang member
- Gang tattoos
- Reliable source¹⁰ ID's them as such

If an individual meets at least one of the above elements but has no documented crime involvement or arrests, that person will be considered an associate. Both gang members and gang associates are held active in the gang database for three years after their last gang-related contact (Monroe Crime Analysis Center, Gang Database, 2014).

For the purpose of this study, we use the term “gang-involved” rather than “gang-related.” The difference is that the term gang-related is more subjective, as it could refer to incidents that occur *because of* gang issues, which would be difficult to prove. *Gang-involved* simply means that an incident involved at least one member or associate of a gang. The definition used for determining gang involvement for the Rochester Shooting Victims Database was “whether the victim or suspect was known to Law Enforcement as a gang member/associate prior to the shooting, or if the intended target or suspects are identified as being involved in a specific gang” (Rochester Shooting Victims Database Coding Manual, 2013, p. 46). If a victim

¹⁰ A reliable source could be a significant other, fellow gang member, probation officer, etc.

had no gang affiliation and a suspect was not identified, there could be no determination made as to whether the incident was gang-involved, so in these cases the field was left blank. For the purpose of the following discussion, the term *gang member* will be used to refer to both members and associates.

Frequencies and Crosstabs

Of the 474 total shooting incidents in this study, 50.6% (240) of incidents were gang-involved. A total of 69% of the cases that were coded with a valid value (either “yes” or “no”) were identified as being gang-involved (126 cases had missing values). For the following analyses, only one victim and one suspect from each incident are used. This is the most efficient way to counteract the one-to-many relationship of incidents to victims and suspects. The victims and suspects used for the analyses should reflect what is thought to be the most serious or “main” victim or suspect. Out of all 474 Victim 1’s (V1)¹¹, 171 (36%) were identified gang members. Similarly, for the 474 Suspect 1’s (S1)¹², only about 30% were identified gang members. Interestingly enough, out of the suspects that were identified, 55.6% of them were gang members.

Fatalities

A total of 64 V1’s sustained a fatal injury. Of these, only 15 were gang members. Conversely, 49 of these fatalities (76.6%) were non-gang members. This is surprising knowing that non-gang members only make up 63.5% of the total V1 population and gang members made up about 36%. Likewise, 38.2% of nonfatal victims were gang members and 61.8% were not

¹¹ Victims that were coded as Victim 1 in each incident usually suffered the most serious injury or were the actual intended target of the shooting.

¹² Suspects that were coded as Suspect 1 in each of the incidents were usually the individuals with the most direct involvement in the shooting.

gang members. These results show a statistically discernable difference in that gang members are more likely to survive being shot than non-gang members (Chi-Square= 5.243, $p=0.022$). It is not yet known what causes these gang members to survive being shot more often than non-gang members.

Shooting Participants

As stated in a previous chapter on the descriptive analysis of shootings, half (50%) of all shootings in the study were between a single victim and single offender (DiPoala, Altheimer, & Klofas, 2014). For gang-involved shootings, however, this situation was found in 44.6% of valid cases, with 126 cases dropped that had missing values. Conversely, single victims and single offenders comprised exactly two-thirds (66.7%) of non-gang involved shootings. The second largest participant breakdown group for gang-involved cases was single victim/multiple offenders in 30% of cases. This was also the second largest participant breakdown for non-gang involved incidents, but only accounted for 20.4%. Keeping in mind that 69% of the 348 valid cases are gang-involved, some notable differences are observed from the crosstabs in Figure 23.

Figure 23: Contingency table showing the relationship of gang-involvement and non-gang involvement and the situational breakdown of participants in shooting incidents.

Gang Involvement and Participant Breakdown in Shootings

		Breakdown of Participants							Total
		Multiple victims/ multiple offenders	Multiple victims/ single offender	Multiple victims/ unknown # of offenders	NULL	Single victim/ multiple offenders	Single victim/ single offender	Single victim/ unknown # of offenders	
Non-Gang	Count	3	4	0	0	22	72	7	108
Involved	% within involvement type	2.8%	3.7%	0.0%	0.0%	20.4%	66.7%	6.5%	100.0%
Gang-	Count	12	18	3	1	72	107	27	240
Involved	% within involvement type	5.0%	7.5%	1.3%	.4%	30.0%	44.6%	11.3%	100.0%

Eighteen (81.8%) of the twenty-two multiple victims/single offender cases were gang-involved. Of the 40 incidents that had multiple victims, 33 (82.5%) were gang-involved. Likewise, 77.1% of incidents with multiple offenders were also gang-involved. There were 37 total cases where the number of suspects was unknown, and 81% of those were gang-involved. All of these findings are statistically reliable at a level of $p = 0.015$ (Chi-Square= 15.704). These findings all suggest that gang-involved shootings commonly have more victims and more offenders than non-gang involved shootings, and also have more cases with an unknown number of offenders. It is interesting to note that three (3) of the incidents with an unknown number of offenders also had multiple victims; all of which happened to be gang-involved. It would logically be expected that in incidents with multiple victims it becomes more likely that one of

them would at least have a glimpse of their attacker(s) or be able to determine how many people were shooting at them. This doesn't seem to be reflected in those three gang-related cases, which begins to suggest that gang-involved victims may not be as willing to offer up information to law enforcement as victims in non-gang involved incidents.

Descriptive information on the suspects was available in 75.1% of all cases. Of the same 348 valid cases as compared above, suspect information was given for 70.4% of gang-involved and 82.4% of non-gang involved incidents. Of the cases where no suspect information was given whatsoever, nearly 79% of those were gang-involved incidents. These results were obtained at a reliably strong level of $p = 0.018$ (Chi-Square= 5.585). These findings may be reflective of the practices of urban street culture that place a higher value on "settling the score" themselves. It is common in high-crime areas, and especially among younger minority males, to not trust law enforcement and therefore may take justice into their own hands through retaliation (Anderson, 1999). In Rochester, 68% of gang members are between the ages of 18 and 30, within one standard deviation of the mean at 24.4 and with an overall median age of 23 years old. Many of these gang members are also minority males who live in high-crime and/or disadvantaged areas. Because of this, it could be interpreted that gang-involved incidents make up a large percentage of cases with no suspect information because the victims may not trust the police and want to handle it themselves, or they may fear retaliation for cooperating with the police.

For the total 474 incidents overall, 44% of V1's claimed that they did not know their attacker (55.4% of 377 valid cases). With only 283 valid cases to compare between strangers and gang-involvement variables, it was found that there is no statistical difference in being strangers or knowing the suspects in terms of gang and non-gang related incidents. 47.6% of V1's from gang-involved cases claimed to not know their attacker, and 52.4% knew their attacker.

Alternately, 46.9% of non-gang involved shooting victims claimed not to know their attacker. For these results, there was a Chi-Square value of 0.01 and a p-value of 0.92. This suggests that while there may appear to be very slight differences in percentages between strangers in gang and non-gang involved incidents, this cannot be heavily weighed as it is not statistically reliable. However, this statistic tells us that a similar phenomenon may be occurring in both gang-involved and non-gang involved shootings. Research and common sense suggests that more often than not, victims are targeted for a specific reason, as over 60% of the shootings were related to disputes. Additionally, in 348 valid cases, 31.7% of gang-involved and 16.7% of non-gang involved cases were coded out as “victim uncooperative,” which is statistically reliable at a level of $p = 0.003$ (Chi-Square= 21.569) Therefore, victims may in fact know their attacker, but in many cases, particularly in gang-involved cases, victims are unwilling to cooperate and provide information. Despite this, there are still a handful of victims who were just simply in the wrong place at the wrong time.

Circumstances and Gang-Involvement

It was found that of all 474 shooting incidents, 89 (18.8%) involved a victim bystander. “Victim bystander” is defined as an incident in which 1.) any victim of the shooting was not the intended target and 2.) if the shootings was related to a dispute, the victim was not involved in the dispute. Out of 348 valid cases between gang-involvement and victim bystanders, 20.4% of gang-involved shootings resulted in a bystander being shot. 72% of total valid incidents that had a victim bystander were gang-involved. Alternatively, 68.2% of shootings where no bystanders were hit were gang-involved. Though the increase in gang-involved victim bystanders from non-gang involved victim bystanders was small, the difference was found to be statistically unreliable with a Chi-Square value of 0.378 and a p-value of 0.539.

Examining other areas of circumstantial factors in shootings, we find that disputes account for 60.1% of shootings in the study period. “Dispute” is defined as any grievance between two or more individuals. “Dispute-related” is defined as a shooting that occurred as a result of a dispute, regardless of dispute type or duration. Of 348 valid cases, 66.7% of gang-involved cases were found to be dispute-related. Of the non-gang involved shootings, 54.6% were dispute-related. The differences in these findings are statistically reliable with a Chi-Square value of 4.626 and a p-value of 0.031. Dispute-related shootings will be investigated further in the next chapter of this series.

The common media-driven image of drive-by shootings and gang involvement is somewhat supported by our findings, although these incidents are still not as common as pop culture might have us believe. For the purpose of this study, a drive-by is defined as a shooting in which a firearm was discharged from a moving or temporarily stopped vehicle. We found that 11.4% of all shootings in the study were drive-bys. Additionally, drive-bys accounted for a higher proportion of gang-involved shootings than non-gang-involved shootings. Of the 347 valid entries, drive-bys accounted for 13.4% of gang-involved shootings and only 4.6% (5 cases total) of non-gang involved shootings. Furthermore, 86.5% of the valid drive-by shootings were gang-involved, and 66.8% of non-drive-by shootings were gang-involved. These differences were found to be statistically reliable with a Chi-Square value of 5.992 and a p-value of 0.014.

We next examine the role of physical confrontations as they lead to shootings. This information may be useful in the planning of strategies for reducing and preventing shootings. In the context of mutual fights and brawls in relation to shootings, a “mutual fight” is defined as a victim and suspect engaging in a mutual physical altercation with each other immediately preceding the shooting. A “brawl” means that more than two individuals were involved in a

physical fight immediately resulting in the shooting. 8.6% of all cases involved a mutual physical fight between the victim and suspect, and 6.3% were the result of a brawl. For the 348 valid cases, 7.1% of gang-involved shootings were the direct result of a mutual physical fight between the victim and the suspect, which is discernibly less than the 15.7% of non-gang involved shootings involving a mutual physical fight (Chi-Square= 6.333, $p= 0.012$). Similarly, shootings involving a brawl also made up 7.1% of gang-involved incidents, which is a reliably larger proportion than the 0.9% of non-gang involved incidents involving a brawl (Chi-Square= 5.757, $p= 0.016$). Of the 18 valid cases that did involve brawls, 17 of them (94.4%) were gang-involved. These findings are interesting in the fact that both variables of “mutual physical fight” and “brawl” involve similar confrontational behavior; however, the difference is in the number of participants involved. It was found that gang-involved shootings had a lower likelihood of involving mutual physical fights between two people than non-gang involved incidents, but gang-involved shootings also had a *higher* occurrence of brawls than did non-gang involved shootings. This tells us that reducing the existence of brawls will have a greater impact on gang-involved shooting incidents than it would for non-gang involved shootings. Therefore, if reducing gang-involved shootings is a priority, it will be more beneficial to focus efforts on anticipating and quickly intervening in physical altercations between multiple gang members.

Weapon Use

This section will examine the use and involvement of firearms during gang-involved incidents and non-gang involved incidents. First, the overall breakdown of the number of firearms present during shootings is as follows: 84.8% of incidents had 1 firearm present, 12.4% of incidents had 2 present, 2.3% of incidents had 3 guns present, and 4 and 5 firearms each were present in 0.2% of incidents. Between gang-involved and non-gang involved shootings, there

was no discernable difference in the number of weapons present. For the 348 valid cases, 85.8% of gang-involved shootings had 1 firearm present, 12.5% had 2 firearms present, 1.3% had 3 present, and 0.4% had 4 present (Chi-Square= 2.98, $p= 0.561$). Had there been a reliable difference in the number of firearms used in these incidents, we might be able to direct tailored policies toward the different types of incidents. However, there exists no true difference in the number of firearms present in gang-involved cases and non-gang involved cases. One implication of this could be for policy-makers to continue or begin to place a high priority in getting guns off the street and making it more difficult to obtain firearms, whether legally purchased or illegally obtained. The majority of individuals involved in these shootings do not have a valid New York State pistol permit, and several have felony convictions that lawfully make them unable to possess any type of firearm. Restricting the illegal obtainment of firearms would likely reduce both gang and non-gang involved gun violence.

In addition to the number of firearms present, we can examine the difference in the number of shots fired in gang-involved incidents as compared to non-gang involved incidents and all incidents in general. Determining the number of shots fired during certain types of incidents may be useful in deciding where to place the most prevention efforts. For example, it could be argued that the greater number of shots fired creates a higher likelihood of seriously injuring the victim, injuring others nearby, and damaging property. The number of shots fired reflects the count of the total number of shots fired during an incident, including law enforcement-fired. This was measured by taking the lowest number that was most commonly reported in the documents for the incident. If physical evidence shows a higher number of shots than what witnesses report, the number from the physical evidence was used. Of the overall cases, 28.5% had only one round fired during the incident. This was the most common number

of shots fired for the total incidents. The second most common number of shots was two (2) in 16.7% of cases. This is followed by four (4) shots in 15.2% and three (3) shots in 14.8% of cases. The greatest number of shots fired out of all the incidents was eighteen (18) shots in only one case. Out of the 348 valid cases, it appears that gang-involved shootings are generally more likely to involve a higher number of shots fired. Only 23.3% of gang-involved shootings had one round fired, compared to 41.7% of non-gang involved shootings. There were 16.3% of gang-involved cases and 16.7% of non-gang involved cases that had two (2) shots fired, and 16.3% of gang-involved and 11.1% of non-gang involved cases had three (3) shots fired. On the higher end of total shots fired, 8.8% of gang-involved incidents had at least 8 shots fired while non-gang involved incidents had 3.7% with 8 or more shots. Additionally, 21 (84%) of the 25 valid incidents with 8 or more shots fired were gang-involved, and 6 out of 7 valid cases that had between 12 and 15 shots fired were gang-involved incidents. However, these findings were found not to be reliable, with a Chi-Square value of 22.356 and a p-value of 0.072. Even still, the number of shots tend to be higher in gang-involved shootings and therefore pose a greater threat to public safety. That being said, it would be reasonable to direct resources to reduce gang-involved shootings to increase public safety.

The type of firearms used in these incidents may also be of interest, particularly to policy-makers. Of all 474 cases, a total of 62.4% were found to involve a handgun¹³. However, there were 27% of incidents where the firearm type was unknown. Out of the incidents in which the firearm type was known, 85.5% of them were handguns, 5.8% were rifles, and 8.7% were shotguns¹⁴. A graphic breakdown of the types of firearms used in gang-involved and non-gang

¹³ This analysis was run using only the firearm designated as the first or most prevalent firearm used in the incident ("W1") from each case.

¹⁴ If a firearm was only identified as a "long gun," it was coded as RIFLE.

involved shootings is presented in Figures 24 and 25. For 348 valid cases, handguns were involved in 85.8% of the gang-involved shootings and 83.7% of the non-gang involved shootings when a firearm type was known. Notably, only 20.4% of non-gang involved shootings had a firearm type that was unknown while gang-involved incidents had 26.7% unknown. Despite the appearance that gang-involved incidents have slightly more handguns and a higher rate of unknown firearm types than non-gang involved incidents, these findings are not found to be statistically reliable. The value for Pearson’s Chi-Square was 1.822 and the p-value was 0.61.

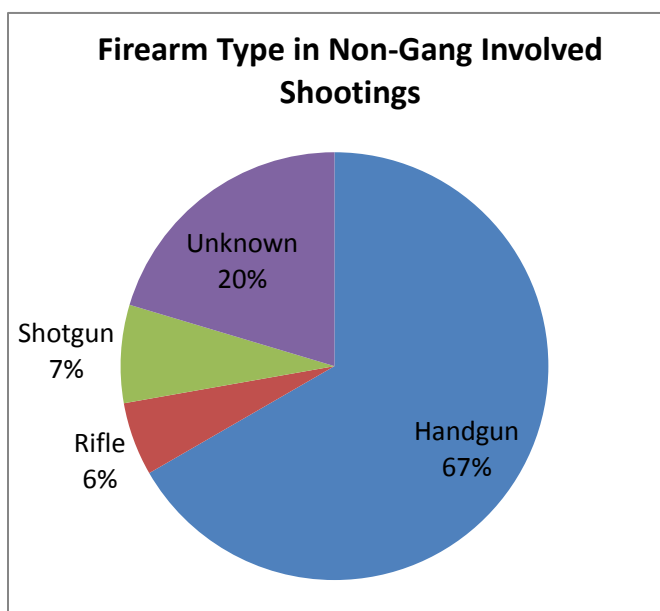


Figure 24: Percentage of firearm types that were used in non-gang involved shootings

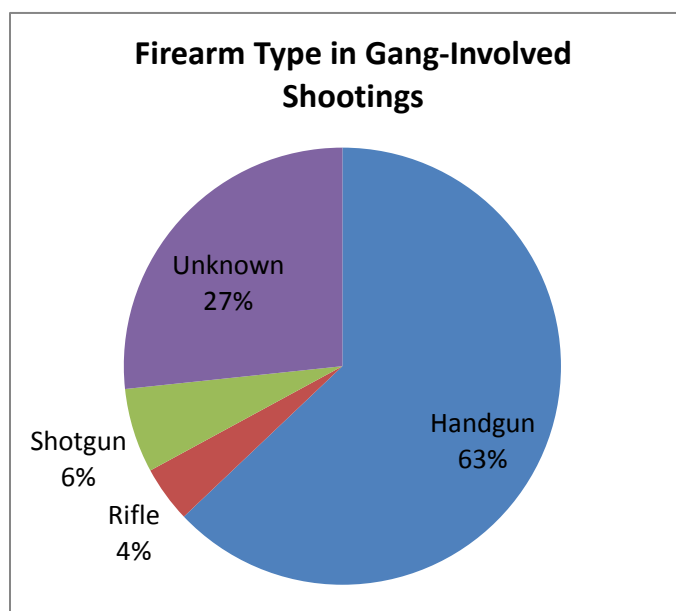


Figure 25: Percentage of firearm types that were used in gang-involved shootings

The last two variables to be looked at in the realm of weapons are whether the victim had a weapon during the incident, and if a suspect was shot. These results could potentially give us an insight into whether victim involvement in the precipitation of shootings increases with gang-involvement. Out of all the incidents, a victim had a weapon in 6.5% of them¹⁵. Separately, a

¹⁵ “Weapon” consists of all instruments as defined by the New York State Penal Law, Section 265.01.

suspect was shot in just 1.3% of incidents (6 cases overall). For 348 valid cases, non-gang involved shootings surprisingly have a higher percentage of incidents where a victim also had a weapon, reaching 10.2%. By contrast, 5.8% of gang-involved shootings had victims with weapons, which is lower than the overall percentage. These results are found to be not statistically reliable however, resulting in a Chi-Square value of 2.116 and a p-value of 0.146.

The final crosstabs comparison in this section deals with whether a suspect was also shot during the incident. There may be a relationship between this variable and whether the victim had a weapon; however, this field may also capture instances where a suspect was shot by a fellow suspect, shot by law enforcement, or shot themselves. Of the 336 valid cases of whether a suspect was shot, the 6 suspect shot incidents are split 3 and 3 between gang-involved and non-gang involved. These make up 1.3% of gang-involved cases and 2.8% of non-gang involved cases, suggesting that suspects are more likely to get shot in non-gang involved incidents than suspects in gang-involved incidents. However, this cannot be statistically supported with such a low number of occurrences (Chi-Square= 0.928, $p = 0.335$). Of note, suspects shot themselves in 4 of these 6 cases, and for the remaining two cases the victim shot the suspect, with one falling in a gang-involved incident and the other a non-gang involved incident.

Summary

The results of this analysis provide an insight into the realities of gang-involved and non-gang involved shootings in Rochester, NY. The purpose of this study was to identify any notable reliable or unreliable findings in an effort to direct or refocus interventions and policies that aim to reduce gun violence. With over 50% of shootings in Rochester being gang-involved, it can be proposed that targeting the reduction of gang-involved violence could significantly lower the overall rate of shootings in the city.

Some of the most notable areas of difference were in lethality, the breakdown of shooting participants, the availability of suspect information, and in certain types of immediate circumstances surrounding an incident. It was discovered that gang members are less likely to be killed if shot than non-gang members. In gang-involved shootings, there are discernibly fewer incidents that involve only one offender and one victim, as over 80% of the cases involving multiple victims were gang-involved. Additionally, over 80% of the cases in which the number of suspects was unknown were also gang-involved, which speaks to the availability of suspect information and cooperation of victims and witnesses to provide information. In nearly 30% of gang-involved cases, no descriptive information on a suspect was provided. This compares to just under 18% of non-gang involved cases where no suspect information was given. A possible explanation for this lack of information could be due to the fact that some victims might intentionally withhold information. Gang members in particular are more likely to adhere to the values of “the street” and be reluctant to cooperate with the investigation. Witnesses as well may be more vulnerable to perceived or actual threats from gang-involved individuals if they cooperate with the police. As a result, this creates a disparity in the existence of viable leads since these investigations rely heavily on victim and witness cooperation.

While disputes cause about 60% of the overall shootings in Rochester, disputes account for just under 68% of shootings that are gang-related. Among other circumstantial causes that are important to gang-involvement, drive-bys were also found to be more common in gang-related shootings than in non-gang related shootings. Gang-involved shootings were found to less often begin with a fight between the victim and suspect, yet interestingly begin more often with a physical brawl between more than two people. This may be reflective of the core concept of a “gang” and the group mentality. Therefore, it could be that brawls occur more often in gang-

involved shootings simply because gang members travel with one another more often than non-gang involved participants of shootings. However, this has yet to be proven.

There are several results of this study that were interestingly found to be statistically non-discernable. To begin with, it was found that there is no difference in whether a victim knew the shooter between gang and non-gang involved incidents. This could possibly also be explained by the previously mentioned theory of the “code of the street” and the fact that gang-involved victims may not want to disclose that they actually knew the person who shot them, for various reasons already mentioned. This may also apply to non-gang members; although gang members are typically more likely to adhere to the self-dependent ways of the street. Another aspect that was found to have no discernable variance was the presence of a victim bystander. According to the results, there was a slightly higher chance that an uninvolved and non-targeted individual would be shot in a gang-involved incident as opposed to a non-gang involved incident; however, this difference was found to be not discernable.

Interestingly enough, there were no discernable differences found in the use of weapons between gang-involved and non-gang involved incidents. The number of firearms present in gang-involved shootings reflected a slightly higher number than the overall breakdown, but the gang-involved number of firearms generally did follow a similar breakdown as the overall cases. The number of shots fired during an incident was the one weapons variable that was closest to reaching statistical reliability. Again, there was a tendency for gang-involved incidents in this analysis to have a higher number of rounds fired during a single incident than shootings that were not gang involved, but through crosstabs, the number of shots fired was found to be statistically unreliable at a level of $p=0.072$. It was further found that there is no difference in the type of firearm used between gang-involved and non-gang involved shootings. Handguns were

still the most common type of firearms to be used between gang and non-gang involved incidents, although they were used slightly more often in gang-involved shootings. There were also more gang-involved cases that had an unknown type firearm than there were for non-gang involved cases. Again, this may be partly due to the willingness of participants to provide information regarding gang-involved incidents. The last area examined was the relationship of gang involvement to whether a victim had a weapon or whether a suspect was shot. It was found that victims had a weapon in non-gang involved shootings in almost double the number of victims in gang-involved shootings. Suspects were also shot in over two times the number of non-gang involved cases than gang-involved cases. This would say that victims are more likely to have a weapon and a suspect is more likely to be shot in *non*-gang involved incidents than in gang-involved incidents. However, both of these situations had extremely low numbers of occurrences and both of these were found to be statistically unreliable as far as gang involvement.

There are several implications that can be drawn from these findings. It was found that discernibly more gang-involved shootings than non-gang involved shootings begin with a physical brawl between more than two people. Likewise, it is also found that gang-involved shootings more commonly contain a larger number of both suspects and victims. This is important to be aware of in instances where multiple gang members may be in close quarters with each other such as parties, school events, and festivals. Knowing about these events beforehand and who will be there and when can give law enforcement and other staff time to prepare and prevent potential upheavals.

The low level of cooperation with law enforcement is another problematic aspect of these incidents. It is well known throughout the criminal justice field that an integral part of any

investigation relies on information from the victims and witnesses. Without the cooperation of these individuals, it is seldom possible to make an arrest. This is particularly apparent in gang-involved incidents. The gap of information transfer occurs most prominently in variables such as victim cooperation, available suspect information, situational breakdown of participants, relationship of suspect to victim, and weapon type. Supposing that this lack of cooperation is due to a “code of the street” mentality, there are several ways in which to rectify it. Although it is surely not a law-enforcement exclusive fix, there may be efforts that can be made to improve relations and trust between police and individuals with a traditionally “street” mentality. However, this endeavor would take a significant amount of time and collaboration between multiple facets of the community to change the existing culture. In the meantime, there might be a way to approach gang-involved incidents in a different manner. When a shooting is identified as being gang-involved, it may help for an investigator who already has a working relationship with the individuals involved to head the case, or at least be the one to interview the victim. If this relationship cannot be established, the next step could be to involve a third party that they know and trust such as parents, coaches, older siblings, teachers, etc. These people who have the most influence and insight with the victim may be the best resource to persuade the victim to cooperate with the investigation, and to convince them that it may be in their best interest to do so. With this surplus of information, it is then possible to continue out an investigation toward ideally making an arrest. The hope is that as more victims are willing to provide information to assist the process of formal social control, the more often suspects will face formal consequences and the less likely they will think they can get away with it in the future. This is admittedly a very optimistic and idealistic approach, but we can say this: in order to truly make a substantial impact on the reduction of gun violence and gang-involved gun violence in particular, we must

place an emphasis on the aspects that are found to play a unique role in these incidents. Gang-involved shootings account for over half of all shootings in Rochester, so if these incidents are even somewhat reduced then the number of shootings overall will invariably be reduced.

Chapter 9

Analysis of Shootings in Rochester, NY:

Dispute versus Non-Dispute Shootings

It has been found that disputes accounted for just over 60% of all shootings in the City of Rochester, NY between 2010 and 2012. These disputes range from anything including small-scale, short-term spats all the way up to long-standing, group-on-group feuds. The goal of the following analyses in this chapter is to further understand the nature of these disputes, the effect they have on shootings and shooting outcomes, and identify notable areas of differences between dispute-related shootings and non-dispute related shootings. The thought is that by understanding the interaction of disputes against other characteristics of shootings, we may be able to identify possible areas of intervention for the reduction of dispute-related gun violence. With 60.1% of shootings identified as being dispute-related, the reduction of these should in turn decrease the overall number of shootings significantly.

Measurement of Disputes

Throughout the course of this study, a dispute is defined as any grievance between two or more individuals or groups. In order for an incident to be considered dispute-related, there must

be law enforcement documentation that the shooting occurred as a result of a dispute, regardless of the dispute type or duration (Rochester Shooting Victims Database: Coding Manual, 2013). Such documentation could be in the forms of crime reports, investigative action reports, field interview forms, and intelligence bulletins distributed department-wide. If there is no law enforcement documentation that indicates the shooting was a result of a dispute, the incident is considered to be non-dispute related. Shootings in this study are further broken down by dispute type. The four types include: disputes over money, property, and/or drugs, romantic disputes, domestic disputes, and “other” types of disputes as a catch-all. These dispute categories are not mutually exclusive and may coincide since multiple reasons for a dispute can be documented. If a dispute type is presented and documented in any way as being a cause of the shooting, it will be coded as such even if another source presents a different reason for the shooting. The dispute types to be examined are defined as follows:

- 1.) Money/Property/Drugs: If there was any law enforcement documented indication that the shooting occurred as a result of a dispute over money, property, or drugs. Two or more of these may be present in a given case. It may also be found that there is only information that the dispute is over some kind of material goods. Oftentimes, full information is not disclosed by the participants of the shooting, particularly if they are involved in illegal activities, and therefore the exact item of contest may be unclear.
- 2.) Romantic: If there was any law enforcement documentation that the shooting occurred as a result of a romantic dispute. This could be related to problems of jealousy, romantic competition, children in common, and any relational problems between lovers or ex-lovers. This does not necessarily have to be considered a domestic dispute. A romantic dispute also does not have to be between intimate

partners, but could instead involve an ex-partner seeking revenge on the new significant other, as one example.

- 3.) Domestic: If there was any law enforcement documented indication that the shooting occurred as a result of a dispute between members of the same household, family, or between co-habiting intimate partners. This could also be related to a romantic dispute, but does not necessarily have to be.
- 4.) Other Conflict: If there was any law enforcement documented indication that the shooting occurred as a result of a conflict that does not fit the description of the above three categories, or if the nature of the dispute is not specified.

The instructions of the coding manual specify to code a shooting as dispute-related *only* if there is a documented indication in the reports that it may be involved in such. Therefore, with 60.1% of the shootings identified as being dispute-related, there are likely others that went undetected for reasons of insufficient information. This could be due to the inability to interview victims and witnesses, victims and witnesses withholding information, or information provided that may not be clearly documented. That being said, the majority of shooting incidents were identified as involving disputes, which calls for a deeper analysis into the types of disputes and effects they have in regard to shootings.

Frequencies and Crosstabs

Between the years 2010 and 2012, 285 of the 474 shooting incidents in Rochester, NY were identified as being the result of some type of dispute. Out of these incidents identified as being part of a dispute, 44% were over money, property, and/or drugs, 16.2% were romantic, 6.7% were domestic, and 41.9% were related to a conflict type other than these or the type was

not specified. Again, there can be multiple dispute types coded for any given incident, which is why these percentages do not add up to 100. The following discussion uses crosstabs to compare various elements of shootings among dispute-related and non-dispute related incidents. We will also examine the differences between the identified types of disputes and how they relate to these elements.

Fatalities

Fatality may be one of the most important variables to understand when it comes to shootings. Although it does not necessarily indicate intent, it would be important to know the kinds of shootings that more often tend to have a fatal outcome. Counter to the previous analysis for gang/non-gang shootings, this part of the analysis will not examine simply the “Victim 1” from each case. Rather than making comparisons using individual-level variables, we will use the “top charge” field that indicates the most serious criminal charge for each incident. The “top charge” refers to the aggregated crime category of the most serious offense according to the Federal Bureau of Investigation’s (FBI) Uniform Crime Reporting (UCR) hierarchy (FBI, 2004). A top charge of Murder indicates that there was at least one fatal victim in the incident. Of all valid 474 cases, 17.2% of dispute-related shootings ended with at least one fatality, while only 9.5% of non-dispute related shootings were fatal. This tells us that dispute-related shootings are distinctly more lethal than non-dispute related shootings with a Chi-Square value of 46.548 and a p-value of 0.00.

Under the dispute type of money, property, and drugs, 21.9% were fatal as opposed to 11.3% of all incidents that were not involved in a dispute over money, property, or drugs being fatal (Chi-Square= 13.175, $p = 0.04$). It is further found that 21.3% of romantic disputes ended in fatalities, compared with 13.4% of shootings being fatal that were not involved in a romantic

dispute. This was however found to be not statistically reliable with a Chi-Square value of 7.518 and a p-value of 0.276. Under domestic disputes, 20% of domestic disputes ended in a fatality and 13.9% of all other types of shootings ended as fatal. This is also not statistically reliable with a Chi-Square of 0.931 and a p-value of 0.988. In the last category of “other” disputes, 13.7% were fatal while 14.3% of every other shooting were fatal. Though this difference is apparently small, it is reliable with a Chi-Square of 23.737 and a p-value of 0.001. This all tells us that disputes over money, property, and drugs are discernibly more fatal than other types of disputes, as well as non-dispute shootings. Knowing this can help us to prioritize the types of shootings on which to direct resources. Since dispute-related shootings are found to result in a fatality more often than non-dispute related incidents, and disputes over money, property, and drugs prove to be the most fatal dispute type, it would be reasonable to focus more measures on these types of situations to prevent further fatalities.

Circumstances

Understanding certain circumstantial factors surrounding these incidents may help to identify situations that necessitate an intervention. Knowing where, when, why, and how dispute-related shootings occur could aid in proactively identifying potential shooting situations.

It is found that there is no discernable difference in the adversarial breakdown of victims and offenders regardless of whether the shooting is dispute-related or not (Chi-Square= 1.494, p= 0.096), nor was there a discernable difference in the number of participants involved in dispute and non-dispute shootings (Chi-Square= 9.335, p= 0.156). The percentage of dispute-related and non-dispute related shootings in which a victim was classified as a “bystander” was also found to be not statistically discernable (Chi-Square= 0.023, p= 0.88). For this chapter as well as the

prior, an incident is coded as “victim bystander” if any of the victims were not involved in the dispute (if there was one) and not an intended target.

The previous chapter in this paper examined the role of gang involvement and shootings. It was found that gang involvement accounts for a large number of shootings (50.6%) in the study. In terms of disputes, there are discernibly more dispute-related shootings that are gang-involved than non-dispute related shootings that are gang-involved. Of 348 valid cases, 73.1% of dispute-related shootings were also gang-involved, while 62% of non-dispute related shootings were gang-involved (Chi-Square= 4.626, $p = 0.031$). Within the categories of dispute type, only the findings for domestic disputes were statistically reliable. 45% of domestic disputes were gang-involved, while 70.4% of all other shootings were gang-involved (Chi-Square= 5.694, $p = 0.017$). Since no other dispute type saw a statistically reliable difference in gang involvement, we can say that while overall gang involvement is greater in dispute-related shootings, we cannot find a reliable difference in the types of disputes that matter, other than gang involvement is less common in domestic disputes. This information could be useful for the purpose of understanding that dispute-related shootings are more commonly gang-involved than non-dispute related shootings, and that domestic disputes are less commonly gang-involved, but there is no found difference among the other dispute types in terms of gang involvement.

In terms of immediate circumstances before the shooting, we also look at immediate initial confrontations as they lead up to a shooting. Understanding the involvement of these confrontational factors might further help to identify potential situations that may result in a shooting. For the purposes of this study, the definitions are as follows. A “mutual fight” refers to the victim and suspect engaging in a two-sided physical altercation. A “brawl” includes more than two individuals that are involved in a physical altercation. “Victim aggressor” means that

“the victim was the initial aggressor in the incident [using threats, aggression, or physical attacks] and gets shot as a result (Rochester Shooting Victims Database Coding Manual, 2013, p. 43). Detecting any reliable differences in these variables between dispute-related and non-dispute related shootings may help us to determine where to focus our prevention resources and how to do so.

It is found by comparing all 474 valid cases that there is no reliable difference in the presence of mutual fights in dispute or non-dispute shootings (Chi-Square= 2.106, $p=0.147$). However, a slight increase is seen in mutual fights involved in dispute-related shootings as opposed to non-dispute related shootings. The portion of dispute-related shootings that involved a mutual fight was 7.4%, while 2.4% of non-dispute related cases involved mutual fighting. This shows that while it may appear that dispute-related shootings begin as mutual fights slightly more frequently than non-dispute related shootings, there is found to be no true statistical difference. Surprisingly for the same 474 cases examined, there was a statistically discernable difference in the presence of a brawl between dispute-related and non-dispute related incidents. With a Chi-Square value of 9.41 and a p -value of 0.002, we found that 9.1% of dispute-related incidents involved a brawl, and 2.1% of non-dispute related incidents involved a brawl. The striking difference in the statistical reliability between brawls and mutual fights could possibly be explained by the situational differences in the nature of the two variables. It is logical to hypothesize that most physical altercations would inherently involve a dispute, because there would seemingly be a purpose for the confrontation to begin with. However, the reasons for the progression of each type of physical altercation may differ. For example, a mutual fight might begin as a robbery that turns physical, if the victim attacks back against the suspect. In this case, there would be a “mutual fight,” but the incident would not be considered dispute-related since it

began as a robbery. This could be one reason why we find no statistically discernable difference in the presence of mutual fights in terms of dispute and non-dispute related incidents. Likewise, brawls with multiple people fighting may often begin as planned events or even a sudden spark of friction, causing sides to attack each other. We may be able to explain the existence of a statistically reliable positive relationship between brawls and disputes, since perhaps disputes themselves may cause more people to be involved in the scuffle, or more people being present in one place might cause a dispute to flare up. These findings lead us to believe that brawls with multiple people fighting are more common in starting dispute-related shootings than non-dispute related shootings. This supports previous findings in this chapter and the previous gang chapter that a number of shootings may be able to be prevented by recognizing situations that tend to catalyze these violent events. In this case, it may be an effective practice to identify locations or situations that may draw a large group of people in close quarters, or even recognizing a large group gathered on a corner or in the street. Dispersing these groups may have the potential to interrupt any brewing altercations that may induce gun violence.

On a related note to physical altercations and confrontations, we next look at the behavior of victims and how they may contribute to these shooting incidents. As previously explained, a “victim aggressor” refers to an incident in which any or all of the victims in the shooting were the initial antagonist for the incident. Not surprisingly, it is found that victim aggressors are discernibly more likely to be found in dispute-related incidents than non-dispute related incidents, with 7.4% of dispute shootings involving a victim aggressor and 2.4% of non-dispute shootings involving a victim aggressor (Chi-Square= 5.13, $p= 0.024$). A logical explanation for this difference is that more often than not, a person will initiate a confrontation for the exact reason that a dispute or conflict already exists; seldom does one in their right mind

strike up an altercation with a stranger for no reason. This indicates that especially in terms of disputes, victim involvement does have an impact on the outcome of a potentially violent conflict. For this reason, it may be worthwhile to target prevention efforts on the specific persons highly at risk for shooting victimization. To identify these people, certain risk factors will have to be identified through a separate analysis of shooting victims, victims of non-shooting assaults, and a representative sample of the overall population in Rochester. Variables found to have the strongest statistical relationship with shooting victimization could then be used to identify the level of risk for an individual in question. A possible method of intervention and prevention in this case would then be to focus educational or deterrence practices on specified individuals or groups who are identified as being most at risk for becoming victims of shootings.

Weapon Use

This section will examine firearm involvement and instrumentality in non-dispute related shootings and different types of dispute-related shootings. It would be reasonably important to know if there are any differences in the way weapons are used in these incidents so as to tailor prevention strategies to specific situations in order to be the most effective. We will look at the firearm type used, whether the rounds were discharged from a moving vehicle, and the number of shots fired during dispute-related shootings and non-dispute shootings in overall, and within each type of dispute.

Similarly to the analysis involving fatal victims, we will only be using firearms coded as “W1” (weapon 1) from each of the cases for weapon type, representing the primary or most instrumental firearm used in the shooting. We find that there was a statistically discernable difference in weapon types between dispute-related and non-dispute related shooting incidents

(Chi-Square= 14.539, p= 0.002, 474 valid cases). The table in Figure 26 shows the breakdown of each firearm type for dispute-related and non-dispute related incidents.

		Firearm Type				Total
		Pistol	Rifle	Shotgun	Unknown	
Non-Dispute	Count	109	2	15	63	189
Related	%	57.7%	1.1%	7.9%	33.3%	100.0%
Dispute-	Count	187	18	15	65	285
Related	%	65.6%	6.3%	5.3%	22.8%	100.0%
Total	Count	296	20	30	128	474

Figure 26: Contingency table showing the presence of firearm types in dispute-related and non-dispute related shooting incidents.

A notable finding in this table is that rifles were used much more often in dispute-related incidents (6.3% of cases) than non-dispute related incidents (1.1%), and shotguns were used in non-dispute related incidents (7.9% of cases) more often than in dispute-related incidents (5.3% of cases)¹⁶. Another notable point is that discernibly fewer firearm types were unknown for dispute-related shootings than for non-dispute related shootings (65.6% versus 57.7%). Possible reasons for the differences in unknown information could be due to the nature of some of these disputes and procedural elements. It could be that more official resources are dedicated toward solving major disputes, and therefore more information is collected. It may also have to do with participant cooperation or more detailed documentation by officers. Unlike other previous findings, it appears that weapon information is more readily available for dispute-related incidents than non-dispute related incidents. If this is the case, then this asset may be able to be cultivated to work in the favor of law enforcement and crime prevention. It may indicate that

¹⁶ If a firearm was only identified as a “long gun,” it was coded as RIFLE.

there is an opportunity in dispute-related shootings for police or other professionals to gain leverage to acquire more information in hopes of leading toward an arrest or further prevention of violence.

“Drive-by” shootings are commonly portrayed in media as a way to deliver a threatening message, or as intentional retaliation. In reality, there could arguably be an inherent difference in the purpose and nature of someone shooting from a moving vehicle as opposed to walking up to someone and shooting them. For this study, the term “drive-by” refers to a shooting in which “a firearm was discharged from a moving motor vehicle,” including running vehicles that are stopped temporarily (Rochester Shooting Victims Database Coding Manual, 2013, p. 48). Not surprisingly, we found through comparing 472 valid cases that drive-by shootings occurred more often in dispute-related incidents (13.0%) than in non-dispute related incidents (9.1%). However, these findings were not statistically reliable with a Chi-Square value of 1.688 and a p-value of 0.194.

The number of shots fired during an incident may also relate to whether an incident is dispute-related or not. As mentioned in the previous chapter, the more rounds fired during an incident could potentially create a more dangerous situation, increasing risk to bystanders from stray bullets, and increasing the risk of serious injury to the victims. Figure 27 shows a contingency table of the number of shots fired during dispute-related and non-dispute related shootings and the frequency of occurrences for each. We notice that non-dispute shootings more often contained a lower number of shots fired than dispute shootings. Non-dispute shootings had a single round fired in about 38% of cases and 2 shots fired in 19% of cases, while dispute-related cases contained lower percentages with around 22% being a single shot and 15% having 2 shots fired. It should also be noted that once the number of shots becomes greater than 2, the

representation of incidents is consistently higher in shootings that are dispute-related. We could therefore make an interpretation that disputes cause a higher number of rounds to be fired during an incident than non-disputes. However, we cannot entirely rule out coincidence as a reason for these observed differences since the p-value in this analysis was 0.051 (Chi-Square= 24.923).

		# of Shots Fired																Total
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	18	
Non-Dispute Related	Count	72	36	24	25	13	7	3	2	3	3	0	0	1	0	0	0	189
	%	38.1%	19%	12.7%	13.2%	6.9%	3.7%	1.6%	1.1%	1.6%	1.6%	0%	0%	.5%	0%	0%	0%	100%
Dispute Related	Count	63	43	46	47	29	21	8	5	6	5	1	1	2	3	4	1	285
	%	22.1%	15.1%	16.1%	16.5%	10.2%	7.4%	2.8%	1.8%	2.1%	1.8%	.4%	.4%	.7%	1.1%	1.4%	.4%	100%
Total	Count	135	79	70	72	42	28	11	7	9	8	1	1	3	3	4	1	474

Figure 27: Contingency table displaying the number of shots fired during dispute and non-dispute related

The relationship of the number of shots fired and the existence of a dispute is important to know if we want to try to prevent the most dangerous scenarios of shooting situations. If a reliable relationship is found in future studies that supports the generalization that dispute-related shootings are more likely to have a higher number of shots fired, then we can justify allocating even more resources to the prevention of these types of incidents.

Money/Property/Drugs

In terms of weapon types used in specific dispute types, we found that there was a statistically discernable difference in the weapon types used in disputes that were over money, property, or drugs, as opposed to shootings that were not over a dispute, or the dispute was not related to a material item (Chi-square= 11.029, p= 0.012). With 473 valid cases, we find that shootings related to disputes over money, property, or drugs have a higher use of handguns and rifles than other types of shootings, and a much lower percentage of unknown firearm types (17.2% unknown compared to 30.7% unknown in other shootings). Handguns were used in

69.5% and rifles were used in 7% of shootings that were disputes over money, property, or drugs, as opposed to respectively 59.7% and 3.2% of shootings that were not related to a dispute over money, property, or drugs. Shotguns were used in nearly the same percentage of material dispute cases as incidents that were not material dispute-related (6.3% of money, property, drug dispute shootings; 6.4% of other shootings).

It is also found that there is no statistically discernable difference in the number of shots fired and whether the shots were administered during a drive-by when comparing shootings related to money/property/drug disputes against all other shootings. For the number of shots fired, we see a similar pattern as seen previously in the number of shots fired in all dispute-related shootings and non-dispute related shootings (Figure 27). In this case, we see an increase in frequency of more shots being fired in material disputes than other types of shootings, though the pattern is not as precise as general disputes (valid cases= 473, Chi-Square= 15.418, $p=0.422$). For the 471 valid cases of drive-bys, there was a Chi-Square value of 0.038 and a p -value of 0.845, supporting that the slight observed difference in 11.7% of material dispute shootings and 11.1% of other shootings has no statistical reliability and therefore no reliable relationship.

Romantic

We also found a statistically discernable difference in weapon types for romantic disputes. Of the 473 valid cases, there was a surprisingly low frequency of handgun use in romantic dispute-related shootings. Just about 49% of romantic-related shootings involved handguns, while 63.8% of all other shootings involved handguns. Furthermore, rifles were used more often in romantic dispute-related shootings (12.8%) than the 3.3% of other shootings that involved rifles. These results prove to be statistically reliable with a Chi-Square value of 10.96 and a p -value of 0.012. Strangely enough, there were more unknown types of firearms in

romantic disputes observed than there were for other types of shootings (31.9% of romantic, 26.5% of other shootings). This seems to go against common sense.

Figure 28: Contingency table displaying the number of shots fired during romantic dispute-related and non-romantic dispute related shootings.

		# of Shots Fired																Total
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	18	
Non	Count	127	74	62	60	39	22	11	6	7	8	0	1	2	2	4	1	426
Romantic-	%	29.8%	17.4%	14.6%	14.1%	9.2%	5.2%	2.6%	1.4%	1.6%	1.9%	0%	.2%	.5%	.5%	.9%	.2%	100%
Related																		
Romantic	Count	8	5	7	12	3	6	0	1	2	0	1	0	1	1	0	0	47
Dispute	%	17%	10.6%	14.9%	25.5%	6.4%	12.8%	0%	2.1%	4.3%	0%	2.1%	0%	2.1%	2.1%	0%	0%	100%
Total	Count	135	79	69	72	42	28	11	7	9	8	1	1	3	3	4	1	473

One would think that in a situation that is so inherently intimate, some participant must know many of the details. However, this may be another instance in which the parties prefer to handle the issue themselves, without any law enforcement intervention.

Another surprising finding in this particular analysis was the relationship of drive-bys and romantic disputes. We found that there was a higher percentage (12.8%) of drive-bys that occurred during romantic dispute-related shootings than the 11.1% of drive-bys that occurred in all other shootings. This surprising amount of drive-bys in romantic disputes may be explained by some cases of jealous exes or current lovers riding by a residence and shooting off some rounds in anger, or any other variation. However, these results were found to be not statistically reliable 471 valid cases, a Chi-Square value of 0.12, and a p-value of 0.729.

In terms of the number of shots fired, we see somewhat of an opposite pattern happening in romantic dispute-related shootings than material disputes and all dispute-related shootings in general. Examining Figure 28, we can almost see a bell-shaped curve type of relationship forming between the percentage differences of romantic disputes versus all other shootings.

Interestingly, the most common number of shots fired during romantic dispute-related incidents was four (4) shots fired in 25.5% of the cases. This compares to the highest percentage of 29.8% of other types of shootings with only a single shot fired. Furthermore, we see a drop in the frequency of higher numbers of shots fired in romantic dispute incidents as compared to other shootings. These findings are statistically reliable for 473 valid cases, with a Chi-Square value of 28.879 and a p-value of 0.017. There may not be a direct policy implication for this finding, but it could be interpreted to indicate that romantic dispute-related shootings tend to have between 3 and 6 shots fired, where other shootings more commonly would have between 1 and 4. This is perhaps because intense emotions are often the direct cause of these types of incidents and the shooters become swept up in a wave of passion. These types of incidents would arguably prove to be more difficult to prevent without knowing potential specific situations that may lead to gun-involved violence. In order to have an impact on shootings related to this type of dispute, along with domestic-related shootings, it may become necessary to individualize approaches and deal with multiple underlying factors creating these volatile situations.

Domestic

The term “domestic” in this study refers to members of the same household, persons in the same family, or co-habiting intimate partners. As far as domestic dispute-related shooting cases are concerned, the basis of conflict is irrelevant; the concept measured by this variable is whether a dispute was involved and if so, if the combatants fit the above definition of a domestic relationship. Keeping in mind that only 20 out of all 474 valid cases were identified as such, we find no statistically reliable differences in weapon use between domestic dispute shootings and

all other types of shootings (Chi-Square= 7.283, $p= 0.063$). However, there are a few notable observed differences. Pistols were seen to be used much less frequently in domestics than non-domestics (45% of domestics; 63.2% of others). Conversely, rifles and shotguns were used more commonly in domestic dispute shootings than nondomestic shootings. Rifles were used in 15% of domestic shootings and 3.7% of nondomestic shootings, and shotguns were used in 10% of domestics and 6.2% of non-domestics. Interestingly enough, there was not a single domestic shooting that involved a drive-by. All other shootings had 11.9% of cases being drive-bys. These results were found to be not statistically reliable, however, having a Chi-Square value of 2.698 and a p -value of 0.100 (472 valid cases). This finding seems logical though, due to the fact that domestic disputes characteristically involve parties who are relationally close and usually in close quarters. It may be that either these disputes spring up at an instant and a gun happens to be easily accessible, or the assailant intentionally opts for a more intimate and confrontational delivery rather than an impersonal drive-by. Although unable to be confirmed in this analysis, this hypothesis may be found to be statistically supported in an analysis with a larger sample size.

Unlike the statistical reliability of the number of shots fired in romantic dispute shootings, this variable is not found to be statistically reliable in domestic dispute cases. For the 474 valid cases, the Chi-Square value was 11.02 and the p -value was 0.751. Nonetheless, we do see an overwhelming proportion of domestic shootings that had only a single (1) shot fired, in 55% of domestic shootings. This compares to the 27.3% of all other shootings that had a single shot fired. Also of note, 85% of domestics had between 1 and 3 shots fired, while the same number of shots were fired in only 58.8% of non-domestics. There were also no domestic shootings that had over 7 shots fired. Similar to romantic dispute-related shootings, the

fundamental reasons that ignite these incidents are very different than the causes of other dispute-related shootings and non-dispute related shootings. For this reason, it would be helpful to study the progression of events that lead up to these violent incidents in order to develop a plan of action for violence reduction.

Summary

Through this analysis, it was discovered that dispute-related shootings are distinctly more lethal than non-dispute related shootings. Shootings resulting from disputes over money, property, and/or drugs were also discernibly more likely to become fatal than all other shootings. Romantic disputes appeared to be more lethal than other shootings not related to a romantic dispute, but this finding is not statistically reliable. Domestic dispute shootings had a slightly higher likelihood of being fatal as opposed to other shootings but is also not statistically reliable. “Other” disputes that lead to shootings were found to have a discernibly higher likelihood of fatality than the rest of the cases, though this difference was small. Overall, the most fatal dispute type was discovered to be disputes over money, property, and/or drugs. These disputes had nearly two times the risk of the rest of the non-material-dispute related shootings. This could be very valuable information to be aware of in order to take a targeted approach to a specific problem.

It was found through this study that there really is no discernable difference in the proportion of the number of victims versus number of offenders, the overall number of participants, or whether or not there was an unintended victim bystander injured between dispute-related shootings and non-dispute related shootings. There was, however, a discernable difference in gang involvement and dispute-related incidents. It was found that there was a reliably higher percentage of dispute-related incidents that were gang-involved than non-dispute

related incidents that were gang involved. The type of dispute was generally not found to matter in terms of gang involvement; however, domestic disputes were less likely to contain gang involvement.

In terms of physical confrontation leading up to shootings, it was discovered that there is no reliable difference in mutual fights between dispute- and non-dispute related incidents, but there was a difference in the presence of a brawl. There were discernibly more brawls that occurred in dispute-related shootings than brawls that occurred in non-dispute related shootings. As for victims initiating these events, it was found that discernibly more dispute-related incidents began with a victim aggressor than did non-dispute related incidents.

Weapon use was another area considered in this study. It was found that the type of weapons used (i.e. firearm type) were statistically different in overall disputes and each identified dispute type, other than domestic disputes. Handguns and rifles were more commonly used in disputes over money, property, and drugs, while rifles were used more frequently and handguns were used much less frequently in romantic disputes. We also looked at the number of shots fired and incidents of drive-by shootings in the context of disputes. It is believed that these two variables may reflect intent and signify intimacy and passion at the time of the shooting. When compared against non-dispute related shootings and all dispute-related shootings, the existence of a drive-by being involved was found to not be statistically reliable. Likewise, we were unable to find any statistically reliable difference in drive-by shootings for any of the dispute types examined. This is somewhat surprising since common sense would say that the primary reason for doing a drive-by shooting is *because* of a dispute. However, we could explain this by the sheer nature of a drive-by shooting: the purpose is to come and go quickly. In these

cases, very little suspect information may be given and it would therefore be difficult to determine the cause of the shooting.

Because of the extent of variation in disputes identified in this study, it is difficult to draw definitive generalizations. The disputes being examined can range from small and insignificant one-time spats, to never-ending feuds embedded across generations. In future research on this subject, it would be beneficial to measure and attribute ordinal values to the intensity of the disputes. This would enable a comparison of differences between spontaneous short-term disputes and long-term complex disputes. In order to accomplish this, cases would have to be re-read and re-coded to identify the length of time and degree of activity involved in the dispute.

Chapter 10

Conclusion

There is no debate that gun violence has plagued many urban communities for decades, and the city of Rochester, New York is no exception. With a shooting victim rate consistently in the top 3 of the state, Rochester is prime territory for the study of this type of violent crime (Division of Criminal Justice Services, 2016a). The only truly accurate way to capture information this large for the purpose of study is through a multi-variable database. However, it is extremely rare for police departments to retain data in a way that can be statistically analyzed. In order to begin to study the shooting data, a structure needed to be established and the data needed to be manually entered. Once this was in place, it was possible to pull the data and

conduct analyses. This chapter summarizes and highlights the most notable findings from the analysis done from this database.

Creation of the Rochester Shooting Victims Database

The need for a database to be created was realized at the onset of the desire to study shooting victims in Rochester. Rochester, like many other jurisdictions, only retained minimal data in the form of standard datasets. The data collected consisted of victims' names, birthdates, incident date, location, and time, and minimal initial suspect information. Admittedly, there was a lot of missing information here such as weapon type, location type, circumstances of the shooting, and outcome of the investigation. In order to supplement this information, a database was created through a partnership with researchers from the Rochester Institute of Technology and crime analysts from the Monroe Crime Analysis Center at the headquarters of the Rochester Police Department. This database was created in Microsoft Access and over 200 variables for over 400 incidents were manually inputted by student researchers and crime analysts.

This database is important for the fact that so much information is allowed to be stored in a single location, and much of the frivolous content of the narrative is left out. The remaining information is organized so that it can be queried out and analyzed. This is an important ability to have so that studies and analyses can be done in the future.

Use of the Database

With all of the most important data organized and available at our fingertips, we could finally use empirical data to support or dissuade previous anecdotal assumptions. It has long been maintained that young, black males are often the victims of gun violence. But what is the actual breakdown of victim demographics? And what do we know about the assailants? There

were numerous notable findings throughout this study. One theme that continuously came up was the difference between dispute-involved shootings and seemingly “random” acts of violence.

Through creating this database and coding each individual shooting incident, we were able to look at the circumstances surrounding each of these events. In doing so, we could categorize the types of situations that led to these shootings. We could then determine what kinds of interactions most frequently ended in someone being shot- whether it be an armed robbery, a domestic dispute, a gang-involved interaction, or a dispute over money or property.

Furthermore, we are able to identify the most common firearm types that are involved in these shootings, and the likelihood of suffering a fatal injury based on various factors.

In order to examine these research questions, the entire dataset was extracted and inserted into the statistical program SPSS. Then, through running frequencies, crosstabs, and regression techniques, we were able to delve into the analysis.

Notable Findings

There are findings that came from this research that support pre-existing notions we have on gun violence, and some findings that may be counter to what has been previously thought. The first statistic of note is that a large majority of the shootings in the study happened outside, on a residential street, rather than inside a structure (DiPoala, Altheimer, and Klofas, 2014). It is also no surprise that almost two thirds of shootings happened at night between the hours of 7pm and 3am, while only about 10% of shootings happened in the morning hours between 3am and 11am. Furthermore, it was found that a disproportionate number of shootings occurred during the summer months June through August, and nearly half of all shootings happened on a weekend (Altheimer, DiPoala, Klofas, Bower, 2013). This means that a shooting in the City of Rochester is most likely to occur on a summer weekend night, on a residential street. Taking a look one

step further, we found that these incidents happen more often in certain neighborhoods. Almost 1/3 of the shootings took place in a single zip code (Alzheimer, DiPoala, Klofas, Bower, 2013).

One of the other ways in which we looked at the data was in the circumstances of the shootings. It was found that disputes account for nearly 60% of all shootings during that period of study, and of these, 43% were a dispute over money, property, or drugs. Counter to that finding, nearly 30% of shootings occurred in furtherance of another crime, with robbery being the most common. In addition, half of the shootings were identified as being gang-involved (Alzheimer, DiPoala, Klofas, Bower, 2013). Along these lines, a surprisingly low percentage of shootings were found to be drive bys, at a total of 12%.

In terms of weapon use, the political focus during the period of study had been on “assault rifles” due to high-profile mass-shootings. However, the majority of shootings in this study were found to be carried out by handguns. Of the cases where a firearm type had been determined, over 85% involved handguns. This compares to just over 5% that involved any type of rifle, and just under 9% involving shotguns.

In regard to the individuals who fall victim to gun violence, we found that 96% of victims were either Black (85.4%) or Hispanic (10.7%). 93% of victims were male, and the average age was 25. Additionally, just over a third of shooting victims were documented gang affiliates or members. This tells us that the victimology in this type of violence is nowhere near random.

Future Research

As is true for other geography-specific research, the findings in this study can only speak to the reality of gun violence in Rochester. The same findings may not be true in other agencies depending on the population size, economy, and culture of that area.

Perhaps the most important takeaway from this study is the fact that these shootings do not happen at random. It is quite possible that this is the case in many other urban areas. There are certain times, places, people, and methods that tend to make up the majority of these events. If law enforcement departments are provided with the data to identify these regionally-specific patterns, they may be able to implement tools and tactics to combat their own gun-involved violence. Rochester is part of the “Gun Involved Violence Elimination” (GIVE) initiative developed by the State of New York. Under the GIVE initiative, resources are allocated to the Rochester Police Department and other community and criminal justice organizations to combat gun violence in the city. Some of the many methods to address the issue include: heightened police presence in known problem areas, focusing in on the most violent and problematic gangs, and involving street outreach workers to intervene in ongoing disputes (Division of Criminal Justice Services, 2016b).

In fact, firearm-involved violence may largely be predicted if given the right set of data to analyze. We may not be able to be there to intercept the shooter when they find their target, but we may very well be able to take counter-measures to apply deterrence in highly volatile times and places. On top of having access to the patterns of violence specific to an area, it is also important to identify and keep track of any budding or ongoing violent disputes that may result in additional firearm violence. In order to establish this, it is necessary to incorporate officers’ knowledge in the field with the analytical intelligence of crime analysts. This will allow for the most up-to-date, real-time people, places, and groups on which to focus prevention strategies.

The benefit of creating, maintaining, and analyzing a database of shooting victims within a specific city is that it lets us know when, where, and how these shootings are likely to take place. It can also tell us who is most likely to become a victim, based on past behavior and

involvement. By making these determinations based on recent data, it is possible to allocate additional resources to these areas at certain times and places in an effort for proactive prevention. There is no doubt that a similar structure would benefit other urban areas in their effort to combat gun violence.

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